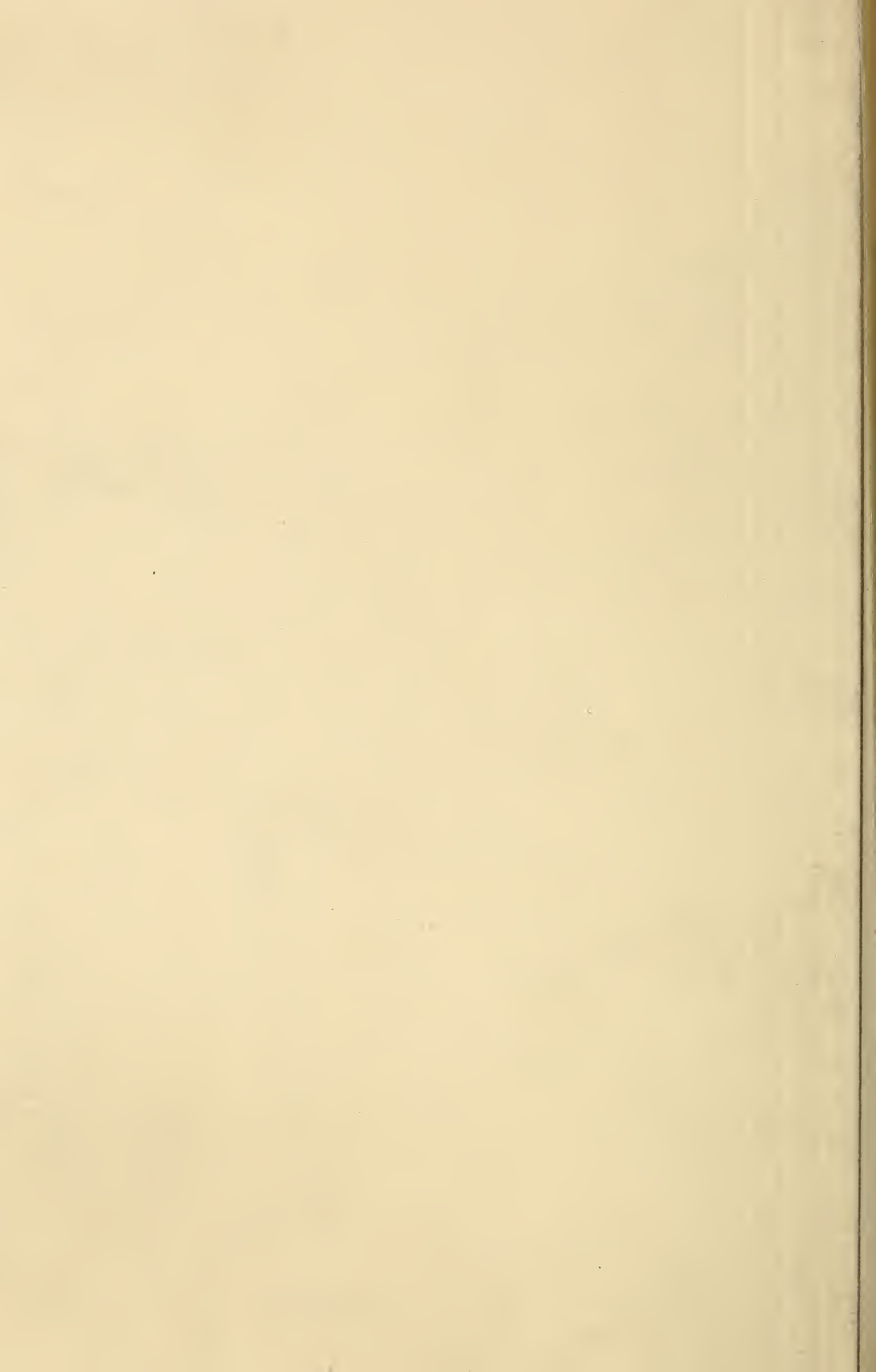


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GLEANINGS IN THE BEE CULTURE A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS. ILLUSTRATED SEMI-MONTHLY Published by THE A. F. ROOT CO. MEDINA, OHIO. \$1.00 PER YEAR

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STRAY STRAWS FROM DR. C. C. MILLER.

TEN CENTS EACH is the price at which W. Z. Hutchinson thinks he'd like the job of rearing virgin queens, using a lamp-nursery.—*American Bee Journal*.

A HUNDREDWEIGHT OF HONEY contains 32.25 lbs. of carbon, 53.75 lbs. of water in combination, 13 lbs. of water of solution, and about 1 lb. of salts and other matters.

THIN SHEET ZINC is recommended by H. W. Brice in *B. B. J.* as the best covering for hive-roofs. How does it compare in price with tin in this country, Mr. Editor?

"ARE BEES DOMESTIC ANIMALS?" is a question having some discussion in Europe. How is it here? Some nice legal points may at some time happen to hinge upon the answer.

IS A COLONY of bees an organism? is a question over which German bee-keepers are having a high old time. Gerstung and his supporters say it is, while Dzierzon and others scout the idea.

DZIERZON says in *Noerdlinger Bienenzeitung* that starving bees throw out brood after sucking out its juices only after the brood has died from want of heat, but that bees never destroy living brood.

JOHN G. COREY spent \$14 for a pump and windmill, and \$4 for a watering-trough for his bees, and thinks he'll save it in bees that would be lost going long distances for water.—*American Bee Journal*.

PH. REIDENBACH has discovered that, besides formic acid, vinous acid (*Weinsäure*) is also present in combs. He thinks it helps prevent mold from dampness, and also helps in changing cane to grape sugar.

A NICE SONG that, to the linden, p. 165. Now what do you think? The author of it read a fine paper on ornamental trees, before a horticultural society, enumerating 13 varieties, and never said "linden" once! O Eugene! Eugene!

GRAVENHORST says that, while in most winters bees have enough chance for cleansing flights, no matter what direction they face, yet once in a while there will be a winter when bees not facing south will suffer from too long confinement. Facing south is always safe.

BEES WILL BUILD combs in wired frames just as readily as if no wire were present; and my experience is that they'll not deviate a hair's breadth to make the septum come where the wire is. If the wire happens to be where they want the septum, all right; but if not, all wrong.

A. F. BROWN has at seven different times fed 200 colonies to get a full working force of field-bees ready for the opening of a given honey-flow, and says, "From this experience I find seven to eight weeks to be nearer right than five or six weeks, as usually given."—*American Bee Journal*.

SIXTY POUNDS of extracted honey per colony, J. McArthur thinks a good average from sweet clover, if it is abundant. R. Stolley thinks five colonies will store more from an acre of sweet clover than would twelve, and estimates 400 to 500 pounds surplus to the acre, if not overstocked.—*American Bee Journal*.

EDITOR BOEHM, of *Deutsche Imker aus Boehmen*, has a colony of bees hanging in the open air that has continued from 1894, having a cloth hung around it in winter. It has twelve combs, the middle one 24 inches deep and 16 inches wide. Last July it cast a swarm of 11 pounds, and an after-swarm of 1½ pounds.

"CAN YOU GET extracted honey from old brood combs of as fine flavor as that in first-class sections?" is asked in *American Bee Journal*. Nine say yes, seven say no. The same question would hardly have had so many negative answers five years ago. [In five years more the answers would all have been negative.—ED.]

GERMAN BEE-KEEPERS don't know much about extremes of temperature if they all have the weather reported in *Centralblatt*. In 1896 the hottest day showed 78° F., against 100°

here; and the coldest day was 12° above zero against 20° below here. The range in Germany for the year was 66°, about what we sometimes have here in two days' time.

FREE ADVERTISING in *American Bee Journal* is given to John A. McCutcheon & Co., Chicago, Williamson Produce Co., New York, and Unger & Co., Buffalo, classing them with Horrie and Wheadon. Editor York sensibly remarks, "Far better to donate your honey to some orphanage and be done with it, than to give it to dealers of no reputation, or that are not well known."

SIX DIFFERENT COLONIES, according to a report in *Revue des Sciences*, show six different lengths of tongue, 7.1, 7.5, 8.1, 8.4, 8.8, and 9.2 respectively—the last nearly a third longer than the first. Now, if there's so much variation why can't a strain of long-tongued bees be developed? Will my highly esteemed friend, the sage of Lapeer, please answer?

"AVOID MELTING wax over too many times; every time makes it darker-colored. Make the cakes medium-sized, and don't pour into the molds until cooled so it will just run nicely. Wet the dish, and you will not have to grease it. If above directions are followed, your cakes will not crack.—*M. H. Hunt, in American Bee Journal*. [M. H. Hunt, according to our experience, is decidedly right.—ED.]

HOW DOES IT HAPPEN a bee can eat honey for months without becoming overloaded? In winter it eats perhaps three times its own weight without a fly. Well, 99 per cent of honey is oxygen, hydrogen, and carbon; and when that's consumed it turns into vapor of water and carbonic-acid gas, neither of which remains in the intestines. In that light the only wonder is that they become bloated as often as they do.



By R. C. Atkin.

OUR WAGON; HOW AIKIN AVOIDS THE USE OF BEE ESCAPES.

In building this wagon, three things were kept in mind; viz., comfort, capacity, and service. For use on our trip we needed room, and at the same time protection. I will describe the wagon first.

The running-gears are the same that I have been using for my honey express to and from out apiaries, etc. It is a regular platform spring, and will carry 1000 to 1200 pounds. I

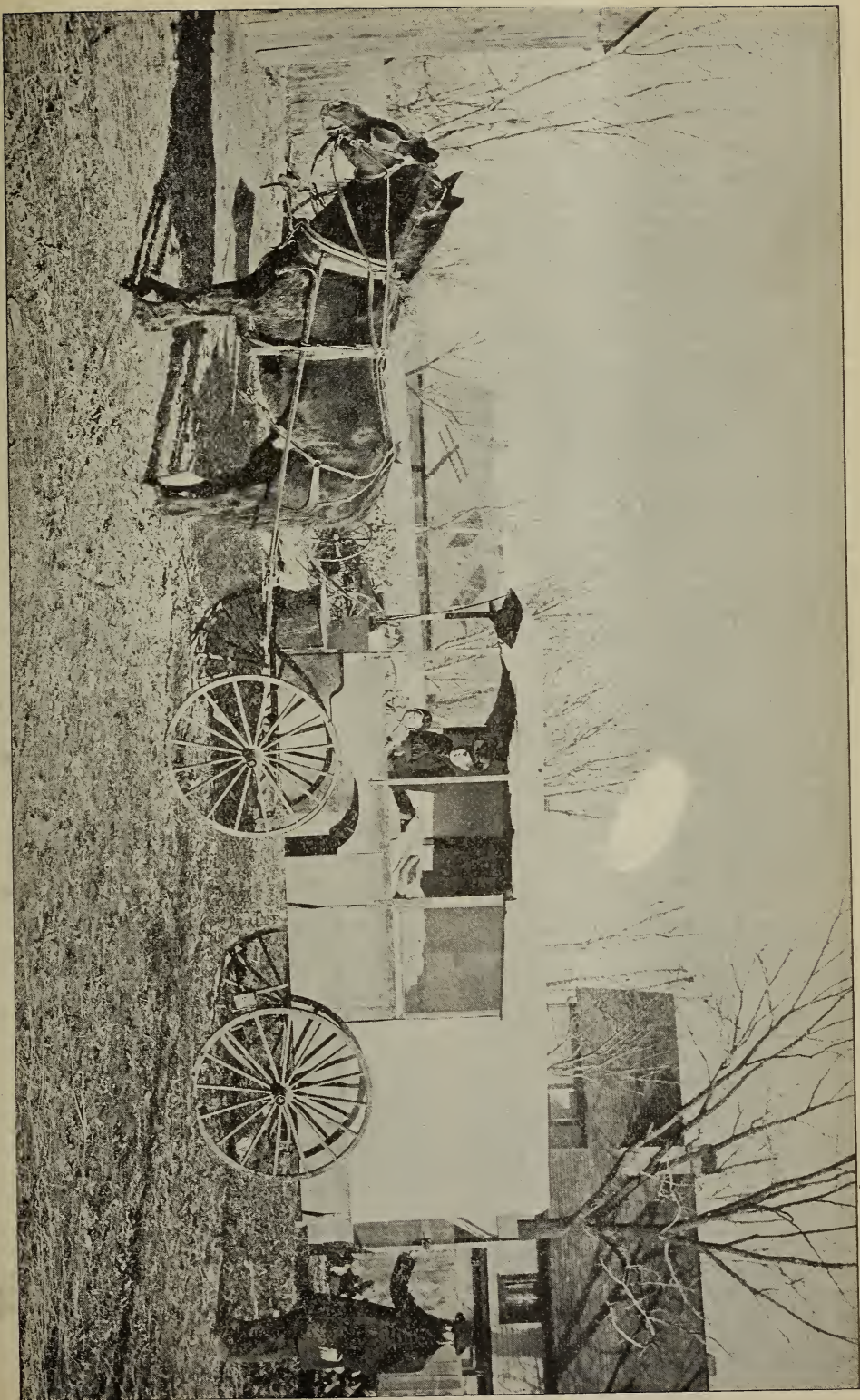
usually carried about 1000 on it in moving hives, honey, or bees.

The box now on it is my own invention, gotten up for the trip, and to use as a honey-wagon afterward. It is 13 feet long from front bow to back, and 4 feet wide, outside measure. From the floor to the highest point under the bows is 5 feet 5 inches—bows what are known as square top. The part of the box forward of the hind wheels is about 27 inches deep, and between hind wheels 13½ inches. The sides are ¾-inch poplar, and the bows are cut square off and set right on top of the sides, and iron plates laid on both inside and out of the lower end of the bows, extending down straddle of the sides, and screwed to the sides. The manner of fastening bows appears very plain in the photo, but may not be so clear in the half-tone. There are 6 bows. The one just in front of the hind wheels goes clear down past the end of the side-board that is scalloped over the front wheel (this side-board goes back only as far as the picture shows it), and is stirrured to it, so there is no possible careening back and forth of this bow: and the others, being fastened to it by the slats above, all are rigid.

It is all covered first with 11-oz. duck; then, over the top, oil-cloth. The part of the canvas that is not rolled up on the near side is fastened permanently, covering two spaces between bows. The next space—just front of the hind wheel—has a wire-screen sash to exclude flies and other insects. The space just forward of the screen, and the next one too, where the wife and baby appear, each has rolling curtains as well as the screened space. This makes 3 curtains on the side, so that the wagon can be thrown open back to the hind wheels. The far side is identical in arrangement, though in the picture but one curtain is up.

There is also a curtain across the front to close that opening, though it does not appear, being rolled up under the "nose." Half of the back end is boarded up solid to the roof while the other half has in it a screen-door with a curtain on the outside of it. The writer stands with his hand on the door-latch, the door being partly open.

Now look at the front end again, and you will see a sort of circular porch or step across above the double-trees. Under the top of that step, and in the center, running parallel with the wagon-tongue, is a short partition. The floor of the wagon comes out almost as far as the top of the porch or step; and that little partition resting on the floor boards, and reaching plump up against the top, makes the step solid. Now, on the near front corner, just below the scalloped sideboard, look close and you will see ends of two hinges. Right there on the corner of the porch, and extending around in front to that partition under the porch, is a feed-box or trough. On the other side is one just like it,



R. C. AIKIN'S BEE-WAGON AND PRAIRIE SCHOONER.

hinged on the other corner. These boxes open or swing outward and back against the front wheels, and are the horses' feed-boxes when in camp, and places for a wrench, grease-box, halter, or any thing we wish to carry there when traveling.

You will wish to know why those side-boards are scalloped so. The box is 4 feet wide—just as wide as I thought I dared make it, so that mud and trash would not roll up and clog on the wheels. Being so wide it was necessary to have a "cut-under," somewhat like an express or delivery wagon in the city, else I could not have turned in a 20-acre field. I did not want a raised bottom up under the seat, as we often see in family carriages, preferring to have a smooth bottom from end to end; so I cut under only *part way* across, making the floor between the front wheels in an oblong circular form. The box directly between the fore wheels is just as wide as any part; but back and forward of the axle it is rounded in to allow the wagon to turn in a reasonable space. The circular part of the side is made of $\frac{1}{8}$ inch sheet iron, back of the wheel being bent at a right angle, and reaching out to the side-board. That scalloped board laps back over the lower side-board, and is plated to it, and also has the sheet iron fastened to it right between the wheels, thus securing against any *sag* in the box which would otherwise occur.

That door in the back is hinged in the center of the end, hence, when open, it lies against the closed half. Just inside the closed half, and built against the back from floor to roof, is a cupboard with shelves and drawers. This makes it so that one may reach it from either outside or inside. Just forward of the cupboard, and almost to the hind axle, is an open space, to be used as needed. From the hind axle to the cut-under back of the front wheels, is a bed-spring and mattress. The bed is up about 16 inches from the floor, on a sort of hinged frame of slats, so arranged that the whole thing can be turned up against one wall and strapped there. The bed, being up so high, gives a lot of room under for boxes or luggage. The bed comes plump forward against the back of the seat. The seat is laid across the bench formed on either side by the cut-under, and the seat-back is reversible like car-seats, and at night the back is reversed or thrown forward, forming a little bed for the baby, just at our heads.

The empty wagon weighs 800 lbs. Our load, including ourselves, was 1000 to 1200 pounds. The wagon rides so easily that my wife says she would rather ride in it than in any buggy or carriage she was ever in.

I have given quite a long description of the construction of the wagon, and its arrangement for traveling; and now I want to speak of its use as an

APIARIAN WAGON.

For two or three years I have had some ideas in regard to getting off honey and getting the bees out rapidly. GLEANINGS readers who have also been reading the *Review* and *Progressive* will remember that I have written somewhat of the bee-escape. I was not then and am not yet satisfied with the work of the escape, they being too slow. I know that the man who has only a few colonies for pleasure, home honey, or even for profit, but in a small way, may find the escape a very handy appliance; but the man who makes the bee-business a specialty and his dependence, especially if he is producing extracted honey, can not afford to wait for the action of the escape as now used. Extracting-supers must be *off and extracted before cold*.

The plan I have had in mind for out-apiaries is to have a wagon that can be closed bee-tight, wire-screen door or window, or even a cone outlet so arranged that bees would find it easily. Drive the wagon into or near the apiary; and as fast as honey can be removed from hives, put it into the wagon, and allow the bees to escape while I continue my work removing honey or otherwise. I thought that this would beat the escape, and prove a very good thing. The wagon would be a fine place to keep every bit of honey from the bees where no house was at the apiary.

Let me tell why I thought this plan better than the escape. I have found by repeated experience, that, if a super be removed and stood on end near the hive—say a foot or more from it—the bees would rapidly leave it, except a few of the *very* young. This I have done—not once only, but at least 75 or 100 times. The bees would often leave a super in 15 or 20 minutes, and, in the majority of cases, in less than two hours. The same thing occurs if the super be placed in a room before a window so that the bees pass out through an escape at the top of the window. This I know by an experience of several years, and in the production of many tons of honey. From beginning to end I can remove and extract honey much more rapidly by carrying into a room to let the bees out than by an escape.

My experience with the wagon has been very limited; but here is what I did with the wagon here illustrated and described. Last August, just before we started on our trip, I had a few full extracting-extras and a whole lot of partly filled ones to remove at two out-apiaries, and bring home two and three miles. This was after the flow was over, and about the worst kind of time for robbing. I drove the wagon into the apiary close on one side. Myself and an assistant began removing the extras. I would take the cover off, at the same time applying the smoke, managing the smoke so as to start the bees down, and closely following them

until they were nearly all down, when the assistant would pick up the extra from the hive and give a long swinging motion, and rub or brush off on the grass the bees collected on the bottom-bars, then immediately carry the chamber to the wagon and shove it in at the back door. Thus he would proceed until he could not reach to set any more in, when he climbed inside and set them forward in shape to go home. Each time he went with an extra, and the door was opened, a cloud of bees was brought out on the screen, and they at once struck for home. In this manner we would have the wagon loaded almost before the robbers knew what was up; and by the time we got every thing to rights, and ready to go home, we had, by occasionally opening the door, almost freed the load of bees. Just as soon as the team was hitched, the door was set open, and kept so till we were half a mile or a mile from the yard, when we closed it again. It was fully as much of a success as I expected.

□ In constructing this wagon I put in all bolts and irons in such a way that the inside surfaces of the box are smooth, so that bee-hives, supers, etc., can be shoved in and slid along without catching. □ The running-gears are too light for the size of the top and box; and if I am prosperous so that I can do so, I shall get running-gears and springs that will carry 2500 or 3000 pounds; then with ordinary hives I can load 40 or 50 hives of bees to move. □ I am so well pleased with the method of removing surplus by carrying into the house to let the bees out of it, that at present I do not wish to use an escape.

[I am well aware, friend A., that you have had a large experience in the matter of taking off honey; but there are others who have had fully as much experience, who use bee-escapes, and insist that they can not get along without them. For instance, J. F. McIntyre and M. H. Mendleson consider them great labor-savers, and would hardly know how to get along without them.* The value of the bee-escape is specially great during robbing seasons. Very often, comb honey has to be removed at such times; and it would never do to let a super stand twenty minutes or two hours near the front of the hive.]

Very possibly locality has every thing to do with the matter; and no doubt you can by your plan, in your locality, remove your honey more economically than with a bee-escape. But last summer I tried setting supers out in front of the hives on which no bee-escapes had been placed. After waiting two hours I got tired, and so I smudged and poked them out, any way to get them out. On other hives, where escapes had been placed the day before, the taking-off of the honey was a real pleasure. There was no shaking of the supers, breaking the back, no smudging, but simply taking them off and putting them on the wagon.

I believe Mr. Aikin shows a practical wagon for bee-keepers. Many of the wagons, as usually constructed for carrying honey and remov-

ing bees, are ill adapted to the purpose. We have a platform spring wagon, with a platform extending over the wheels on each side of the box, and about 14 inches inside of the edge of the box. The bottom of the box is filled with as many hives as we can crowd in, and then the platform is loaded. We have carried as many as thirty colonies at a load, but it makes the wheels creak a little. Last summer we brought home about 1000 lbs. of honey from our out-yard in this same wagon. If we were going to build again we would have the springs and the general running-gear made so as to carry not less than 2000 lbs.—Ed.]

APIS DORSATA.

REASONS PRO AND CON FOR IMPORTING THEM.

Dr. C. C. Miller:—I should like to ask you for a little information in regard to *Apis dorsata*. I am a reader of GLEANINGS, and notice articles by a few on this subject. On page 6, Straws, by yourself, I notice a clipping from the *American Bee Journal*. Now, while I do not believe there is a bee in existence that can gather honey from red clover (except the bumble-bee), please tell me what objection the 14 referred to on said page can have to the government importing them here, and giving them a trial; for if there is such a bee as described, let us by all means have it, and the sooner the better. We know that there is more genuine honey in red clover than in all other honey-plants combined; and if we can get a bee that can and will gather it, we shall have a boom in the honey business in every department. If there is any good objection to the importation of *Apis dorsata* I should like to know what it is; and it would give me much pleasure and satisfaction to have a reply through GLEANINGS. I have kept bees for thirty years, but as a business only five. DAVID N. RITCHEY.

Blacklick, O., Jan. 14.

It seems entirely natural and reasonable for any one to take the view that you do upon first being told that there is a bee so much larger than the one that we now have that it can work upon red clover. Tons of honey go to waste every year that might be gathered from red clover. It would cost very little for government to introduce a bee that can gather it; if a success, it would be a great gain; if a failure, no harm can come of it except the small item of expense incurred by government, and that will be divided among the entire nation, making the expense to each bee-keeper only a small fraction of a cent. So it must be that there are some objections or else the 14 to whom you refer would hardly oppose the movement.

I will try to answer your question as to the reasons given by the repliers in the *American Bee Journal*, so far as they gave them. The question asked was, "From what you have heard and read concerning *Apis dorsata*, do you consider it advisable for the government to

* Mendleson is the man who moves 150 colonies at a single load. See his article, page 817, last year's volume.

import them?" The first answer, given by Wm. McEvoy, is, "No," without any reason added. E. France says, "Yes, try them." Mrs. J. N. Heater says, "I think not." J. M. Hambaugh says, "I am in favor of making the effort." J. A. Green says, "I consider it an experiment of doubtful value." R. L. Taylor says, "No, not in the interest of bee-keepers financially."

I do not know just why Mr. Taylor thinks as he does; but if the project should prove a failure it would certainly not benefit bee-keepers financially. On the other hand, if it should be a success above the highest expectation of any one, and if it should be found that *Apis dorsata* should in this country prove as tractable in every way as *Apis mellifica*, doubling the annual yield of honey, does it necessarily follow that bee-keepers would make money by it? One of the greatest difficulties of the present that confronts bee-keepers is that of finding a market; and if the output should be doubled, and the price cut in two, it would only increase his labor without increasing his pay. But if honey could be made plentier and cheaper, that would certainly seem to be for the good of the people in general, and the financial interests of bee-keepers should not stand before the general good.

W. G. Larrabee says, "Yes, if they would not turn out like the English sparrow." He may have in mind the possibility that *Apis dorsata* would divide the harvest with our present bees, without any additional benefit.

Chas. Dadant & Son hardly have any such fears, for they say, "We do not believe *Apis dorsata* would stand our climate." C. H. Dibern says, "No. I think they would be of no value to the bee-keepers of America." P. H. Elwood says, "Probably not. There are other things the government might do that would help us more."

Prof. A. J. Cook is emphatic in his indorsement, saying, "I certainly do. I think that is just the kind of work for the government to carry forward;" and G. M. Doolittle thinks it can do no harm to try, for he replies, "There is lots of money spent more foolishly by the government than in importing *Apis dorsata*."

Dr. J. P. H. Brown says, "My opinion is that they would not be a desirable acquisition to the bee-keepers of the United States." Jas. A. Stone says, "I have not made up my mind. In doing so, I always think of English sparrows, and I am very slow to say yes." Eugene Secor says, "If the government wishes to experiment with *Apis dorsata*, I have no objections; but as a bee-keeper I shall not ask it to do so at present." Emerson T. Abbott says, "No. Government was not organized to import bees, or any other kind of live stock. The sooner people learn this the better it will be for them and the government too." Rev. M. Mahin says,

"I do not. It is my opinion that they would not be of any advantage to the bee-keepers of America. If they were capable of domestication the people of India would have domesticated them long ago."

Mrs. Harrison seems inclined to poke fun at the scheme. She says, "I do; and put them in the everglades of Florida. They are 160 miles long and 60 miles broad. The water is from one to six feet deep, dotted with little islands. The Seminole Indian and *Apis dorsata* would go well together, for he likes honey when it is to be had for the taking; also fruit; but in his wild state he has never been known to plant a tree or keep bees in a hive."

G. W. Demaree says, "I should be glad if the Agricultural Department of the government would take the matter in hand and import the big honey-bee of India, *Apis dorsata*. But, really, I fear that the undertaking might fail because the officials would most certainly intrust the management of the new bees to some favorite dudes, who would make a windy failure of them." J. E. Pond says, "No! Most decidedly not. . . . I am of the opinion now that the discussion that is being made is more to subserve the purpose of some one who knows that cranks and an easily gulled public always exist, and are 'playing a tune to suit their desire for dancing.'"

Less has been done by our government for bee keepers than has been done by other governments—Canada, England, and some of the European powers. It has done less for them than it has for perhaps every other interest pertaining to agriculture, so it would be nothing very immodest for bee-keepers to ask such aid as they might desire. But if they ask for something that proves of no benefit to the country, will it not lessen their chances for getting aid in other directions? Better first ask aid in the way of experiment stations or something of that kind—something as to whose success there can be little doubt, and not a thing that many regard as a will-o'-the-wisp.

You may ask what reason there is for considering success so problematical. Some have said they think *Apis dorsata* might be successfully domesticated here, and that possibly it might be crossed with *Apis mellifica*. Those of opposite views point to the stubborn fact that it never has been domesticated in its own country. Those who appear to know something about the matter say it can not be domesticated; that it will never stay in a hive, but at stated times will desert its habitation just as surely as a migratory bird. Surely it seems reasonable that it is hardly worth while to bring it here until success has been attained in confining it to a hive in its own country.

You press the point that there is a great quantity of honey to be had from red clover. But it will do no good to get another bee to

work on red clover unless we can get the honey; for the bumble-bee works on it, but that doesn't specially benefit the bee-keeper. Very likely you may say, "Well, even if we don't find it any better than the bumble-bee, it can't do any harm to import it, even if it does no good. The bumble-bee is the only bee that works on red clover, and it will be no loss to let the two big bees divide." Softly. You are quite mistaken in thinking no bee but the bumble-bee now works on red clover. Many have had bees that gathered more or less honey from red clover; and very likely if you watch from year to year you may see some of your own bees at it. It is not at all impossible that we may breed *Apis mellifica* with a tongue so long as to reach to the bottom of the red-clover tubes. There is a decided variance in the length of bees' tongues. In France they have been making an effort to breed larger bees, longer tongues coming with larger bees. In our own country Dr. Murdock has bred bees so large that the worker-cells are almost as large as ordinary drone-cells. He says they work well on red clover.

Now, suppose *Apis dorsata* is brought into this country, behaves as it does in its native land, and multiplies so as to gather nearly all the red clover honey. Don't you see that it will not only be of no use, but that it will be a positive damage to those who have a red-clover strain of bees? No wonder English sparrows came up in the minds of two of the gentlemen making replies. No, let us work to get *Apis mellifica* regularly instead of exceptionally to work on red clover, and not run the risk of getting *Apis dorsata* here until we know for certain that we can make it work for the benefit of its owner, and not to his detriment.

C. C. MILLER.

There are plenty of things we need at the hands of the general government much more than the importation of *Apis dorsata*. If any one wants these bees I doubt not that they can be obtained from missionaries far more cheaply than by sending some man desirous of a fat government job after them.—ED.]

QUALITY OF COMB AND EXTRACTED HONEY COMPARED.

IS THERE ANY DIFFERENCE? IF SO, WHY?

By F. A. Snell.

There is quite a difference in the views of bee-keepers upon this subject. Why this difference? It seems to me it must result largely in the difference in management practiced by the apiarists. Many claim that the quality of honey stored in new combs or in sections is of better quality than that stored in old combs, such as are used mostly for extracted honey, while others as earnestly claim there is no difference. My experience has been that as good honey can be secured in the extracted form,

stored in old combs, as in any other form; and during some seasons, if anything it is better.

In 1895 and '96 our extracted honey was of better body—that is, thicker and richer in flavor than our comb honey. Other years there has been no perceptible difference. Our comb honey was well sealed, but the honey was rather thin or unripe the past two seasons from clover and basswood. The combs on the extracting-hives were only partially capped. The honey was left on the hives some time, which gave time for the moisture to be evaporated; thus it was better ripened than our comb honey, which must be removed soon after it is capped, to present the best appearance and bring the highest price in market.

My extracting combs are kept dry and sweet when not in use. No pollen is stored in them, nor brood, as I use a queen-excluder which keeps the queen from these supers. In good seasons I tier up. I first put on one super of combs; and when these are nearly filled, and a little capping done, I raise this super up and put a set of empty combs under it, next to the brood-chamber, which gives the bees more room. Storing is begun in the new super, and the upper one is filled. Much of the honey being thus uncapped, it is ripened more completely even than when capped soon after being stored. In a week or a little more the first supers are emptied of well-ripened honey, as most of the newly gathered honey has been stored in the lower story.

If the honey-flow at this time continues good, the emptied stories are put under the one put on a week previously, and the work goes on, and we shall have the (then) upper stories of well-ripened honey to take off a few days or a week later. All strong colonies are managed as above described. Those not so strong are run only two-story; but the honey is left on the hives until of good quality. When taken off, all our honey is stored in the honey-room, which is a hot place, and air-dry.

In fine weather the screen-covered windows are left open by day. Our extracted honey is stored in open cans and barrels. With this method we secure good honey if the flowers yield. Of course, in past No. 1 seasons the honey seems almost ripened when stored, and need not be then left so long on the hives. Unfortunately we have had none of these since 1888. In 1895 and '96 our fall honey was of better body than that gathered during summer.

Millidgeville, Ill.

[Whatever may be true of your extracted, the average of extracted is not equal to the average of the comb honey. There is one point that you have not mentioned; namely, that in the production of comb honey the bees begin to store in shallow cells. As the honey is stored the cells are increased in depth. Meanwhile, the honey in these shallow cells is ripening as it is stored, and more perfectly than if stored in the deep cells (full depth) of extracting-

combs. The average consumer says comb honey tastes better than extracted; and if there is any difference it is due to the storage in the shallow cells to start with.—ED.]

LOP-SIDED SECTIONS.

TWO OR ONE STARTER; A REPLY TO DR. MILLER.

By G. C. Greiner.

In his strawy comments (I mean the comments in his Straws) I am pleased to notice that for once Dr. Miller agrees with the rest of us, at least in so far that he does not lay the attending trouble to oblong sections. But in explaining the cause by "weak colonies and poor harvests," I believe the doctor is joking. Yes, Dr. M., this is not the Eldorado of bee-keeping; we have occasionally weak colonies and poor harvests, too, but no more lop-sided sections when these conditions are prevailing than we have when matters are more favorable. If colonies are too weak to work properly, what is the object of letting them spoil what little they do do? Why not unite, make one strong one of two or three weak ones, and produce a desirable, perfect article?

The bottom-starter theory may work with Dr. M. to his entire satisfaction, but I hardly think the extra work and expense of putting in two starters instead of one would be a paying investment with the majority of bee-keepers. Years ago I experimented in that line to some extent, but I could never see any great advantage over the single-top starter.

In writing the sentence which Dr. Miller quotes in Straws, I have probably been a little too hasty, covering too much ground without a sufficient amount of backing. I have never examined unfinished sections for the sole purpose of ascertaining the relative amount of drawn cells and honey contained in the two sides. I simply wrote from the impression which any one receives from the glancing look with which sections are handled when sorting and putting them up for shipping.

Since Dr. Miller mentioned the lop-sidedness of his sections, I have given a lot of unfinished sections a thorough examination, and found that my assertion made in the quoted sentence in Straws is practically correct. This lot of sections, six or seven 24-lb. shipping-crates, is all I have left in the same shape it was when taken from the hives, and is such honey as we sort out for family use, home market, to give away, etc. These sections range anywhere from not quite finished to one-half to two-thirds capped, and are just the right kind to have this lop-sided work, if bees are inclined to do business in that way. To be sure, if we count the cells and measure the depth of honey they contain, we can notice a slight variation on all of them; but the variation is almost always at the very tip bottom end, so that the center of grav-

itation would not vary from the center of the section more than a mere trifle, even if the combs were not attached to the sides and could swing back and forth, as when hung at the top by hinges.

Naples, N. Y.

ANOTHER BEE-KEEPERS' UNION.

THE DUTY OF THE HOUR.

By J. F. McIntyre.

As I read the paragraph at the bottom of p. 129 in GLEANINGS for Feb. 15, I thought of the article and footnote under this heading on p. 610, GLEANINGS for 1892. Please read them, Mr. Editor, and tell us if you do not think that much valuable time has been wasted, and a great deal of foolishness indulged in, by bee-keepers since these lines were written. Paul said, "This one thing I do," and he made a success of doing that one thing. Newman says, "This one thing I do—defend persecuted bee-keepers," and he makes a success of it. He could not see his way clear to fight the glucose-mixers, and make a success of it, and I do not blame him for refusing to undertake the task. I have a few dollars which I should like to spend in prosecuting those men who are labeling glucose "Pure Honey," and spoiling my market for the genuine article, and I know a few other bee-keepers who have a dollar to spend in this direction, and I propose that we put our dollars together and authorize some one who is interested in saving the bee-business from destruction to spend them. I can see no harm in forming a union for any purpose that may be desirable to unite for, and not waste time and energy in trying to get a union organized for another purpose, to change its purpose and spend its money for something else. If I put up a dollar to fight glucose I feel like saying, "If you can't fight glucose with it, give it back to me." I do not want it diverted from its purpose, and used to fight Wheadon & Co., or carry on a lawsuit between two neighbors. The more things a union can use its money for, the less confidence people will have in it, because the manager may spend the money for something that we have no interest in whatever.

Fillmore, Cal.

[I still honestly feel that one union could and should do the work of the two; but now that amalgamation is defeated we may be forced for the present to have two unions—one for defense and the other for fighting dishonest commission houses and the adulteration evil. Of course, there are many things I might say; but now that the "war is over" I deem it both unwise and unnecessary to say any thing further relating to Mr. Newman's policies. The duty of the hour is to beat our swords into plowshares, and *begin work* in harmony and brotherly love. As you will notice in another column, the new Union is laying its

plans to go to work; and it will be glad to receive the names and the dollars of any who are interested in the matter of fighting the glucose evil; and while you and I may have different opinions on these matters, we surely can and will work in harmony in both Unions. —Ed.]

CAN EXTRACTED-HONEY PRODUCERS AFFORD TO BE HONEST?

A SIMPLE WAY TO DETECT GLUCOSE IN HONEY.

By Geo. L. Vinal.

"Mr. Editor:—To illustrate why I chose this subject, I will give a little of my experience in the last two years—not but that I hope all honey-producers are honest.

Last fall I sold some honey to a friend of mine, one who ought to have known that I would not sell any thing but straight goods (it was extracted honey). About New-Years' day I saw the parties, and they asked me what made me mix so much sugar with the honey. It was almost impossible for me to convince them that it was not mixed.

□Another case in a town about four miles from here: I have sold honey to a grocer for four years, put up in pint jars, labeled, etc. This fall he bought at one time a gross, put up in the jars, and at the same time he bought 325 lbs. of extracted in bulk and 100 lbs. of comb. (I wish to state I had done quite a business in peddling in the town, and could generally sell the second time.) □As he was the principal grocer, I did not go there to peddle, as he gave me to understand that he was going to retail the honey in the town. About two weeks ago I went there and called at the store. □The clerk did not know me. I saw, arranged among my labeled jars, jelly-tumblers and some pint jars, unlabeled, filled with honey and a piece of comb about an inch square in each. □I asked the clerk (a lad about eighteen or nineteen years old) where Mr. W— was. He replied he had gone to dinner. □I talked about the honey, sampled some of it in the tumblers, and finally got the lad to say it was mixed with syrup of some kind. When the proprietor came in I asked him about it. At first he denied it; but when I told him I knew it was mixed he said, "Yes, it is about two-thirds corn syrup, or glucose." He says it sells better. It does not sugar, and people like it better, for they think when it granulates it is mixed; and as long as it stays liquid they think it is pure; and if they want it that way why not let them have it? He said, "I can make double the money that I can to sell pure honey."

□I asked him why he did not melt all of it.

□His reply was, "There are some people here who have had your honey, and know that pure honey will granulate, and will have no other. That I keep to sell to my best customers, and

to use in my own family. I went to a confectioner's, with whom I am acquainted, who is making and selling honey caramels. I asked him how much glucose he mixed with the honey he sold. He said about one-third. I asked him why he mixed it. His reply was, 'It does not granulate; and, besides, it makes it cheaper, and the people like it as well as or better than the pure honey when it is sugared.' "

I thought I would see the opinion of the different experts. I got some glucose of him. He said it was the very best quality made. I put one-half good clover honey with it, and sent out five samples to different experts, so called, sending a stamped and directed envelope to each, requesting them to give their opinion as to what kind of honey it was.

No. 1 answered that, in his opinion, by the taste, it was a fine sample of white-clover honey.

No. 2 thought it was good sample of bass-wood and clover.

No. 3 thought it might be a mixture of some kind of syrup and honey, probably glucose.

No. 4 said he thought it was clover and other flowers mixed.

No. 5, whom I expected the least from, said it was a mixture of glucose and honey, according to Root's test.

Now, how is the general public to discriminate the pure from the adulterated? Not one-half of the people read the directions on the bottles about liquefying the honey, or about its granulating. I do not believe, Mr. Editor, all that can be written in the bee-journals does any good. Some able writers should write in some of the daily papers, the agricultural papers, in the magazines, and in that way educate the masses, and thereby kill out the frauds.

Charlton City, Mass.

[It would seem that the policy of making public this article was somewhat questionable; and yet I believe the readers to whom it goes are just the very ones who should know the facts, and thus be able to cope with the evil in a proper and intelligent manner.

In the first place, it is evident that not all the glucose-mixing is done by the large syrup-handlers and honey(?) - houses of the cities. Some confectioners know that, by adding glucose, they can very materially increase their profits—for a while at least; but after a little they will find that their customers tire of such insipid honey.

There are two kinds of glucose on the market—the ordinary, the metallic taste of which in honey can be very readily detected by an expert. This glucose has a brassy and (to me) a somewhat nauseating flavor; and from tests which I made a few years ago I could detect even 10 per cent of it in honey just by the mere taste. Such goods will not sell long, for they are too vile for the stomach of a hog. But there is another kind of corn syrup, the very finest, from which this brassy metallic taste has been eliminated. It is this article, mixed in honey, to which Mr. Vinal doubtless refers, and which can not be readily detected by the taste.

A tolerably sure means, and a very simple one indeed, for determining the presence of such glucose, is by what is known as the alcoholic test. Incorrectly called the Root test above, but which in reality is a test that we obtained from the *Bienenvater* (Bee-master), of Germany, and which reads as follows:

Take a tablespoonful of the honey to be tested, and pour it into a small bottle. Then add three spoonfuls of alcohol, and shake the whole together thoroughly. In about a quarter of an hour there will form in the bottle a cloudy, whitish sediment, and from this one may be sure that the honey is adulterated with glucose.

The directions above say *shake*; but a better way is to stir it vigorously for some little time, and then allow it to stand. In about fifteen minutes it will look as if a very small quantity of milk had been mixed with a little quantity of water; that is, the mixture will have a bluish, milky cast. While this alcoholic test does not show the percentage of adulteration, it is very reliable in showing the presence of the cheaper article. In this State, at least, it is just as much a violation of the law to put in a little glucose as a large amount, without labeling it. If there is any corn syrup present at all, you may be sure that the mixer would not stop short of 50 per cent. If he is dishonest enough to adulterate, he will make a job of it.

Now, I would suggest that bee-keepers buy samples in their local groceries everywhere, of jelly-tumblers containing the liquid stuff with a piece of comb in it. Go to your drugstore and get ten cents' worth of alcohol. Take the stuff home and try the test. If it shows glucose, send the label, detached from the tumbler, to us. If it is not labeled, send the name and address of the grocer handling it.

Although there may be such, I know of no bee keeper or reliable honey-house that puts up pure honey in this shape. The piece of comb is simply a cloak to cover up dishonesty. The very fact that we have had repeated calls for pieces of dry comb, from concerns whose stationery shows they make a specialty of syrups, shows very plainly what the object is.

The heading at the top of Mr. V.'s article is rather startling. I suppose friend V. put it there for the very purpose of catching the eye; but all our readers, or nearly all of them, including friend V., will conclude that the bee-keeper can not afford to do otherwise than to sell the pure product of the hive. You will notice I put in a clause above, "nearly all." Perhaps I should be justified in striking it out entirely. However, as there may be one or two black sheep in our midst, and probably are, I leave it in.—Ed.]

CHIPS FROM WOODCHOPPER.

THE USE OF BURR-COMBS.

Bees usually gnaw the cappings of sections for several reasons. 1. Because they are scared when they are disturbed, and proceed to get a load of honey from the first that comes to the touch. At such times they will cut the cappings when there is plenty of unsealed honey within half an inch of them. They seem dazed, or get reckless. I have seen a black swarm bite nearly all the cappings in the brood-chamber during an examination, and it is expensive business too; for they never fix it up again, and a few such scraps will use up a winter supply,

and unless there is a late flow they will have to be fed, as I have found to my sorrow, sometimes, in requeening, when no honey was coming in.

Another reason is, that they never leave the sections and go back without as big a load as they can manage to fly with; and unless this is supplied in some other way they are obliged to bite cappings to get it; and right here is where the much-abused burr-comb does a good turn if they are filled with honey, which, being broken in removal, furnishes their load, and starts them home much sooner than they would otherwise go. I may add that, at any other time, the burr-comb is a nuisance, although bees will enter the sections sooner and work better with them between the top-bars and the super.

I know one man who had Langstroth hives with light-top-bar frames which sagged half an inch or more, and that space was filled with combs which he never removed, but set the surplus-receptacles directly on them with a thin board bottom between to keep the combs from being attached to the sections. He never gave the bees any other attention than to put them on at the beginning of the harvest, and remove when full; and I have never seen a whole apiary in my life that filled up as uniformly and in as good shape as that one did year after year; but bees could not be handled in that way if you ever wanted to know any thing about their downstairs condition, for they were as immovable as a box hive, but much better for honey production. (Now, that chip must be twice as large as the whole block.) If that big cave had been located here for the last two years there would be neither tons of honey in it nor even pounds; and how do those fellows know about the amount of honey, any way, as they say it can't be seen nor got at?

BEE PARALYSIS.

I've had quite a good many cases of it, Dr. Miller, that did amount to something. I always cure it, but it spoils the swarm for that season, if it gets much of a start before it is attended to.

CURE.

Kill the queen and allow them to raise another from the egg. Don't put in a cell or another queen, but let the brood get all out of the way before another queen gets to laying. I never had a hive affected again if treated that way.

BEE-SPACE AROUND END OF FRAMES.

Why, Dr. Miller, you are over thirty years behindhand if you have just begun to use it. It was the biggest nuisance in the whole business—that is, to have the ends go down tight, and it always made me out of patience to get hold of such a hive. It's far worse than burr-combs. I used nails for end-spacers once, but discarded them years ago, and don't want any kind now; and if I wanted fixed frames I would

use nails in preference to any thing else; but I've no use for fixed frames either.

WHY DO PLANTS YIELD HONEY SOMETIMES AND SOMETIMES NOT?

Well, it is a disputed point, some thinking it wants lots of electricity; but the poorest seasons, and the most of them, with me, have been just that kind of weather. Then others say, dry and warm. Well, that is better for a little while, but it's sure to cut the flow off by killing the plants if it is very dry; besides, in my opinion, drouth is very nearly always at the bottom of the whole thing of honey failure. In an experience of 37 years with bees I have never had a good yield of honey in a season that followed a very dry spell the year before; and I never had a failure the next year after a wet summer, no matter what the next year was—hot or cool, wet or dry. Do you see the point? Some do, and some don't. Well, it is this: If plants can have sufficient moisture all through one season they will prepare for a good yield the next year, and will give it unless something kills them next year or they get winter-killed. I have never seen it fail.

As to the theory of the condition of the atmosphere at the time of blooming, I don't believe it makes much difference. Indeed, the best yields of honey I ever got were in some of the very worst atmospheric conditions possible. I once had one week of great yield when it was so cold and dry that it killed the clover in a week, and killed all the field bees to get the honey too. The sunshine was very bright every day; but a cold northeast wind blew right off Lake Erie. The clover belt was about a mile from the lake, and about two miles from the apiary (every thing nearer and on higher and dryer land dried up without coming to bloom at all); and the bees were obliged to face that chilling wind to get there, and at the end of one week there were no workers left, all having perished except the younger ones not old enough to work outside. The clover also perished about the same time; but in that week the best hive filled 50 1-lb. sections, and made a winter supply, and the weaker ones got heavy for winter. Trees are not so much affected as plants, as they form their buds and get ready for next year during the month of June, especially basswood, the buds of which are full grown and all wood growth done usually by the middle of the month; and although the latter part of the season may be very dry, it does not make much if any difference with plants like buckwheat that grow and bloom all the same year. I think the same conditions prevail, as I never knew it to yield much honey unless it could have moisture to make a good thrifty growth up to the blooming period; but if stunted, and short of water when it was going up to bloom there was little or no honey, no matter how favorable the weather was during bloom.

I have had four good crops of honey in succession, every season of which had had lots of rain; then that was followed by six years of drouth, and not one of these gave any more than enough to winter the bees; and since I have been here we have had three dry seasons followed by no honey the next year, and two wet ones followed by good yields the next year. This past summer was fairly wet, and I expect honey next year any way, whether wet or dry, unless it should be so dry that clover can not grow at all, as it was two years ago.

BEE-ESCAPES, ETC.

ANSWER TO MR. F. GREINER'S INQUIRY, PAGE 83.

By S. A. Shuck.

It is one of the peculiar characteristics in the natural instinct of our common bees not to desert their home, by compulsion or otherwise, without taking sufficient food with them to last them two or three days. This is manifest in the amount of honey taken from a hive by a swarm just issuing; also, when bees are drummed from box hives in transferring; or in disturbing them in any way so as to disorganize them from their regular routine of business.

So pronounced is this peculiarity in their nature that any disturbance of a hive that interferes with the labor of its inmates seems to beget within them a fear that they are to be summarily expelled from their home. The peculiar individuality of different colonies of bees makes this matter much more discernible in some colonies than in others, and is much more pronounced in some races than in others. For instance, the common black and Carniolan bees are much more excitable and become disturbed much easier than pure Italians. The former, on becoming disturbed, do not look for open cells from which to obtain a supply of food, but in their excitement they tear open the cells about them, take up a supply of honey with manifest nervousness, and rush from the combs in that pell-mell, hurry-scurry kind of way that is so characteristic of those races, and which make them so distasteful to the practical bee-master.

Now, in answer to Mr. Greiner's question, "Who can tell us why bees act so in one case and not in another?" I wish to say that, when the escapes are used in the height of the honey season, the bees have all the honey in their sacs they can conveniently care for; and when they are disturbed by the insertion of an escape-board, there is no occasion for their taking up more honey; consequently the cappings are not interfered with. But after the cessation of the honey flow, and especially at the close of the season, there are not only fewer open cells that contain honey, but the bees have but little or

no honey in their sacs, so that, when they find themselves cut off from the brood-chamber by the insertion of an escape-board, they may perforate the cappings to obtain a supply of honey to take with them. But, as stated above, there is a great difference in the excitability of different colonies; and while pure Italians will usually pass out quietly without molesting the honey, blacks, Carniolans, and their crosses are liable to mutilate the cappings more or less late in the season. And further: As the last bees to leave supers are the ones that become most excited over their more apparent isolation, it is natural that they should mutilate the cappings on the sections nearest the place of exit.

One of the leading features of rejoicing over the introduction of a good, practical bee-escape was the lessening of the damage to comb honey by the bees perforating the cappings; for in the old way of smoking and brushing off the bees from sections, in many instances the cappings were badly mutilated in spite of the bee-master's efforts to prevent it. With the use of escapes, the bees do not become so alarmed; and if the bee-master is up and doing in good time there is but little excuse for complaint in this direction.

Talent, Oregon.

FUEL FOR SMOKERS.

THE CORNEIL SMOKER; SHAVINGS VS. STOVE-WOOD; PRICES IN CALIFORNIA AND NEW YORK; BRITISH MARKETS; FOUL BROOD; HORIZONTAL WIRING OF FRAMES.

By Wm. G. Hewes.

I have been testing your Corneil smoker, and find it the equal of any other smoker in all respects, except in price, and in that it is superior, being less—a valued consideration in these days of low prices for honey and only occasional crops.

I notice you recommend burning hard wood and shavings. Shavings are all right. Nothing I have used suits me so well; but to burn hard wood is better for the manufacturer of smokers than for the bee-keeper, because the great heat from the glowing coals of the wood will burn out the smoker in half the time that shavings, rags, punk, etc., will do. I find that the fire-box and nozzle are the parts which first give out; and I think that, if they were made of heavy galvanized iron, the life of a smoker would be longer.

At first I did not like the hinged nozzle, as I found it very difficult to tip back when the smoker was cold and the creosote hardened; but I find that, by tapping the nozzle lightly with a bit of wood, where it fits over the fire-box, it will readily open.

In the "Year-book of the Dept. of Agriculture" for 1895, Secretary Morton, in his report, has a few words to say in regard to the honey

market in England. He quotes "Thurber & Whyland's white-sage honey," in one-pound jars, as selling at \$2.30 per dozen, or nearly 20 cts. per pound. "California, in original cans (about 56 lbs.), per cwt. of 112 lbs., \$9.60," or a trifle over 8½ cts. per lb. As this honey was purchased from the producers at an average of about 4 cts., it can readily be seen that the speculator made a good thing; but what, in our Western vernacular, "breaks me all up," is when I realize that Thurber & Whyland buy my honey for 4 cents, put it into a quarter-cent jug, and sell it for twenty cents. No wonder they are multi-millionaires if they are in the habit of making 400 per cent profit on every thing.

It seems to me the British market is worth investigation by our Exchange if we ever again have a crop of honey to sell; and that jug process, for multiplying by five the price of our honey, gone through with at home.

Secretary Morton further says: "Our agent in England has had several inquiries as to the honey market this year, especially from Texas, and has supplied inquirers with names of importers in England and with information as to how to approach them, and this he will be pleased to do for all inquirers." I should like to request right here that, if any of these inquiring Texans made a shipment to England, they tell through GLEANINGS what success they met with.

The Secretary speaks of bee-keepers as "honey-makers." I wish to inform him, through the medium of this journal, that it is not the bee-keepers who *make* honey, but New York and Chicago merchants.

Foul brood seems to have been rather more contagious the past season than usual. Apiaries which had it several years ago, but whose owners thought in 1895 they were rid of it, were found the past spring to be badly infected again. The foul-brood inspector, Mr. Hart, was sent for, and he looked through all the apiaries in this district, marking the diseased hives; but I fear it does not do much good, as he is not authorized to burn the hives, and the owners often try to cure, which, if they are inexperienced or careless, only results in spreading the disease. Healthy districts are often infected by the moving of a diseased apiary into their midst. A desirable law would be one preventing any person from moving bees without first having them inspected and pronounced free from foul brood. A similar law is now in force in this State in regard to fruit-trees.

Some years ago, when you published the Keany method of wiring frames, I fixed about one thousand in that way; but, as I found that, when the foundation was drawn out in strong colonies, it sagged and made a bad kink where the wires crossed, I abandoned it for the hori-

zontal process, which I had used for a number of years previously. There was one idea in Keany's method, however, which was worth retaining, and which I have retained, but which I see by your circulars, you have not, and that is the fastening of the wire to nails bent in the shape of hooks instead of sewing through holes in the end-bar. I find that, when sewed, unless great care is taken when scraping propolis from the frames, the wires will be cut, and the work undone; and where one has not machinery for making the holes it will be found easier to drive and bend the nails than to make holes with a punch. I do this work on an anvil, as driving against something solid enables me to sink the nailheads into the wood. I use nails $\frac{3}{8}$ inch longer than the thickness of the end-bar. By a tap from the hammer they are bent over, and, after the wires are in place, another tap sinks the projecting points into the wood, and the wires are a fixture.

[We very much prefer shavings in place of stovewood; but some people have an idea that a smoker is not good for much unless it will burn stovewood. Our Cornell will burn hard fuel as well as any.]

It is a pretty big margin between the price of your honey in California and the price as it is about to leave New York. Would it not be well for the California Exchange to seek to find its own British markets rather than to pay some one else a pretty big salvage for doing the same business?

After we had tried the Keeney wiring for a season we found the same difficulty you report. We then took up horizontal wiring, and have been using it ever since, and have as pretty a lot of combs as you ever saw.—Ed.]

PETTIT'S SYSTEM OF TAKING COMB HONEY, AGAIN.

HOW TO GET THE BEES TO FILL OUT THE OUTSIDE SECTIONS.

By S. T. Pettit.

I notice that you, on page 52, have mixed up my system of taking comb honey with Mr. Danzenbaker's system, and that you have come to the conclusion that the results will be practically the same. But I think quite differently. Mr. Danzenbaker's reversible bottom-board (I wish you would let me say "floor" instead of bottom-board) gives an entrance of one inch high only, and the same elevation is kept up all the way to the rear end of the hive. My system gives an entrance $1\frac{1}{8}$ in. high, and the bottom-bars at the rear end are only $\frac{3}{8}$ to $\frac{1}{2}$ in. from the floor.

Now, there are obvious reasons why the results will not be the same in the two systems. Let us look at them for a moment. When the bees come in from the fields a few times they learn to realize pretty clearly that, with a $1\frac{1}{8}$ -inch entrance, they can not reach the frames

near the entrance; a lower entrance would encourage them to keep on trying once in a while. Then, again, when the rear ends of the frames are within about $\frac{3}{8}$ of an inch of the floor, the bees are induced, or a part of them are, to go right on until they can easily catch on to the bottom-bars; so you see this places a lot of them right away back where most needed, the others going up the sides.

But with Mr. Danzenbaker's equal height from the floor, all the way back, almost all the bees would go up at the sides, or manage to reach the frames some other way; they would not go clear back; and the result would be a greater or less neglect of the rear sections. But in my system, the rear sections are equally well cared for. And, further, I want the rear end of the floor about an inch higher than the front end. That position keeps out the water, and helps the bees to keep their house clean.

Again, the section super should not be far from level from front to rear. Well, now, we see that the wedges fix these requirements just right also. I may be allowed to point out that there is less work in placing the wedges in position, and removing them, than there is in reversing the floor twice.

Well, dear Ernest, I beg to say that footnote is my excuse for these comparisons. I have no axes to grind, and no desire to say an unkind word against any one's hive. I believe that reversible floor is an advantage in giving more roominess and more air, but at the same time I am persuaded that there is a more excellent way. It appears to me just now that so much has been said about the lower arrangements of the hive that there is danger of losing sight of the important feature of giving two bee-spaces at the sides of the supers. S. T. PETTIT.

Belmont, Ont., Can., Jan. 23.

[I did not mean to convey the impression that your system and Danzenbaker's were identically the same, but I am glad for your further statement in the matter, for it will leave the subject, I am sure, in such shape that there can be no further possible misunderstanding. Mr. Pettit is a careful bee-keeper, and our readers will do well to try his plan.—Ed.]

WOLF-HUNTING.

INTERESTING REMINISCENCES OF A BEE-MAN.

By E. France.

After living on the frontier in Iowa, trapping and hunting 6 years, I came to Grant Co., Wis. I found pretty good trapping here, so I went at my old tricks again. Beaver were gone, but there were some otter, coon, mink, rats; some wildcats and wolves were quite common. A few years after I came here the county put a bounty of \$4.00 on the wolf. Then the county raised the bounty to \$8.00 to kill a wolf; then the State put on a bounty of \$10.00 for wolves,

and \$10.00 for wildcats. That year I killed 38 wolves and ten cats. The next year the county dropped the bounty to \$5.00; the State also dropped the bounty to \$5.00, providing the county paid five; if the county paid no bounty, then the State paid nothing; so in my county the bounties amounted to \$10.00 for young or old; so I went to hunting young wolves. I found that a different job from what it was to trap old ones.

There were about 40 days, commencing April 5th, when the litter of young ones would be likely to be found together, and could be captured in a bunch. The average litter was about six. For several years I caught from 22 to 40, average about 30, most of them young. But sometimes the old one would be in a den of rocks with the young ones, and she would be very likely to make it lively for the hunter to get them out. Very few had their young in dens. They would more often be found in a thicket of brush or a hollow log, or in the grass, strawstacks, or almost any place, like a litter of pigs. But I found several litters in rock dens.

I had a hard fight with one in a den once. I found them just at night, about sundown. I stopped up the hole, or entrance, of the den, so the old wolf would not move the pups, as she would be very likely to do if she found that some man had been there. After stopping up the hole I went off to a farmhouse to get some supper. After supper I went back to watch the den until daylight the next morning. Two farmer boys went with me. They said they would stay all night, but they got cold and went home at two o'clock. I stayed. There was a little cave up the hill, about 15 rods away, where I could keep out of the wind. I stayed there most of the time. About once an hour I heard something stepping around, and would hear little stones rolling down the steep side hill. I supposed it was the mother wolf, and I was afraid she would dig the young ones out and carry them off. So I would go to the den, and feel to see that the hole was stopped up yet. At such times I would listen at the den, and could hear the pups whimpering.

When it came daylight I went to work enlarging the hole so I could crawl in. I worked about two hours with a hoe that I was working with. It was dark in there, as I made the hole only large enough for me to crawl in, my body nearly filling the drift that I made. When I got to the end of the den I pulled one of the pups to me with the hoe. I took it out and killed it, then went back for more. I hauled another one to me, took it by the leg, and then hauled another one to me; but in getting it so I could reach it with my hand I hurt it with my hoe, and it cried out. Then in an instant I found out that the mother was at home. She came for me; but the hole was pretty small, and I kept pounding back with

the hoe; but she gained on me until I had the hoe by the ferrule, just at the neck of the hoe, and the wolf biting the blade of the hoe. I felt her hot tongue on my fingers. I kept chopping down on her toes and nose so fast that she gave up the fight and went back to the nest again. Then I crawled out, with the two pups that I was holding with my other hand. Then I walled up the den again, and made ready to get the "old gal" out. I had a set of tools of my own make—the head of a carpenter's brace, with a hoe-socket welded on so that I could fasten a pole to it. I had some spears, hooks, twisters, etc., I could put in one at a time, the same as we use carpenter's bits. I cut a handle for my tools, and put in a long ugly-looking spear. I lighted a candle (I always carried a candle), then opened the den and went in with my spear in one hand and candle in the other. Mrs. Wolf was waiting for me, with her head toward me. I instantly speared her in the throat, killing her the first jab. I drew her out, and then got out the rest of the young ones. A spear is better than a gun for that work, as the gun fills the den with smoke; and, if you don't make a dead shot, you are in danger. With a spear there is no smoke; and if the first jab doesn't kill, you are pretty sure to have the spear anchored in the beast strong enough to hold the animal away.

ONE MORE DANGER.

I was hunting one spring along the Mississippi River bluffs for young wolves. I found a place where I was pretty sure there was a litter. About 150 feet up a perpendicular bluff of rocks there was a narrow shelf of rock about two feet wide the most of the way. But there was a part of the way where the shelf was only a foot wide. The rocks above hung over the shelf, so that one could not stand up; in fact, I lay down and crept along the shelf for 50 feet or more. At the further end of the shelf the space widened out and formed a cave under the overhanging rock, big enough for a good-sized bed-room. In there lay seven young wolves—seventy dollars' worth—too young to fight or run away; old one not at home. I killed and scalped the pups, and the next thing was to get back safely. When I looked back over that narrow shelf of rock, and the ragged pile of rocks 150 feet below, I would gladly have given up the seventy dollars' bounty to be safely out of there. But the only way was to go back the way that I came. True, I had gone over the place once, and could I not go back just as easily? In going over the shelf to get there, at the narrowest place there was a rock in the shelf that projected out a little further than the rest of the shelf. After I had got my body past I put my foot against that rock to push myself along. I broke it off and it fell below. That lessened my safety in going back. I took a good rest, took off my coat

and dropped it over the fall, and dropped my hatchet, and started back. I got back by hard work. Then I sat down and rested for an hour before I went down to get my coat and hatchet, and I promised myself that I would not go there again.

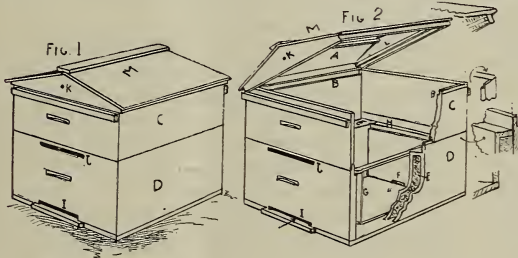
Platteville. Wis.



YOUNG'S CHAFF HIVE.

By J. M. Young.

If you were to step into our workshop or apiary to-day you would see a lot of hives very much in appearance like the small one I send you by this mail. It will explain itself, and the manner of construction will show to you what we have been using to winter our bees in for a period of fifteen years. At one time we had quite a number of colonies in these hives; and from what experience we have had in using them we have met with excellent success, the per cent of loss being very small, usually, when the bees were in the proper condition for wintering.



The model will show that the lower story is packed with chaff only; and the upper story, being single-walled, can be removed by the operator when handling the brood-frames in the lower part of the hive.

The upper story contains frames also, but they hang at right angles to those below. This removing of the upper story in order to get at the lower part is one special feature in making and using chaff hives nowadays, and is one appreciated by practical apiarists. The constant use of this hive by us ever since its introduction alongside of the new dovetailed, has clearly proven that it is not far behind the single-walled hives in manipulation, from the fact we use it every summer, one as much as the other. The outside dimensions are about 20x22, and 21 inches deep. We use the improved Hoffman frame, size $9\frac{1}{2} \times 17\frac{1}{2}$, and any of the single-walled hive furniture is interchangeable with the chaff

hives, or vice versa. It can be made for 10 or 8 frame size, as the apiarist may desire, without changing the dimensions, outside measure, by simply making the inside box of the lower story to suit the number of frames desired.

The 8 frame size has three inches of dead-air space for packing at the sides, while there is only about one-half inch at the ends. It has been our experience that this amount of dead-air space is sufficient to obtain good results; and wider than this is really not necessary. We think this space should by all means be filled with something. We find that dry, loose chaff is more suitable than any thing else that we have tried.

Any size of honey-case or super can be used in this hive, or any width; the new dovetailed-hive super can also be set in or tiered up as may be desired, or, if preferred by the apiarist, a regular 8 frame hive body, with wide frames, may be used in the upper story.

All our chaff hives are furnished with the gable cover, this style suiting us the best. They are about 2 inches deep at the sides, and a sheet of tarred paper is placed under the roof-boards to save leaking, should the lumber be wind-shaken or split. Three-quarter-inch holes are bored in the ends of the gables, giving plenty of ventilation when wintering. Of course, the Higginsville cover may be used, according to

the wishes of the bee-keeper; but we prefer a cover that will fit over the outside of the hive, telescope fashion; then there will be no chance for the weather to beat in and wet the chaff cushions or packing.

The bottoms of all our chaff hives are stationary, and nailed on, with tarred paper placed under the boards.

When the time comes to prepare the bees for winter there are always colonies in the single-walled hives that want to be packed in chaff. Well, it is not necessary to have any outside winter-case, as is usually recommended, to set over single-walled hives, but just take an empty chaff hive (we always have plenty left over after swarming), remove therefrom all the frames, and fill up the lower story with chaff or leaves. Next remove the top and bottom frames of the single-walled hive that contains your colony to be fixed for winter, and then set it inside of the upper story of the chaff hive, and pack all around with your packing material. Of course, your single-walled hive must rest on strips to enable the bees to work out at the upper entrance, as shown in the small hive sent as a sample.

Another special feature of this hive is that of having an entrance at both ends, so that two small or weak colonies may be wintered in the same hive with only a division-board between them. Two colonies in one hive will use less

honey, retain the heat, and winter better than if placed in separate hives. Again, in rearing queens these same large chaff-packed hives afford ample protection to the nursing bees in cold, bad, rainy weather. Such bees must have protection in some way to insure the hatching of the young queens. Thus, in case of an emergency, these hives can be used, or will answer to almost any purpose that comes up in the apiary.

In using single-walled hives during the summer they should be made with square joints; but in using chaff hives we want them made with rabbets or laps, so that there will be no possibility of the weather beating in and wetting the chaff cushions or the bees. In summer the square joints in hives, if broken loose, will be fastened up again by the bees, while in winter they will not be.

It looks very reasonable that chaff hives made with square joints are a grand mistake, and will endanger the life of the colony by allowing the wind and rain to drive in. It will be noticed that all our chaff hives are made to prevent this by cutting a rabbet or lap clear around the hive, where the two stories come together, one-half inch deep and seven-sixteenths inch wide, the cover telescoping over the hive one-half inch, thereby leaving no chance for the water to get in.

The hives are all made of good average pine lumber, thoroughly seasoned and dry. The boards are all cut off square, and nailed under the old-fashioned way, depending merely on the strength of the nails in holding the hives together.

The manner of dovetailing the hives together is one grand improvement recently made in the construction of hives, and will be recognized by all practical bee-keepers; but it takes special machinery—something that all wood-workers do not have.

In conclusion, we don't want it understood that this hive will winter bees every winter without some loss; but we believe that (and our experience has proven this) if bees are in proper condition they will winter as well in this hive as in any chaff hive now made; but the special feature of this hive is in summer management, and the advantages it possesses over other hives of its kind.

Plattsmouth, Neb.

alone, or for honey and some crop of fruit or seeds?

Answer.—This question covers the ground of much discussion which has come about during the past; and I believe that the conclusion come to by nearly all practical bee-keepers is, that it does not pay to plant good land with any seed or plants for a crop of honey alone. Where waste places may be utilized, or something which will produce much honey be made to take the place of weeds, burdocks, or briars, then the planting for honey may be beneficial, not only to the bee-keeper, but to all others, as something of value to some one takes the place of that which is of value to no one, and that which is often worse than of no value, for the scattering of seeds from these waste places is often a nuisance to those who live where the winter's drifting snows may carry the seeds of noxious weeds far and wide.

If I were to think of planting for honey alone, I can think of nothing better than mellilot, or sweet clover; for with us this plant commences to bloom at about the time white clover begins to fail, and continues to bloom from then to frost, to a greater or less extent. Some say that stock can be taught to eat mellilot, in which case it becomes a valuable forage-plant, and pays better than almost any other forage-plant, aside from its honey-producing qualities; but, so far as I know, no animal will touch it in this locality.

Alsike clover is one of the best plants for both honey and hay; and for quick returns there is probably nothing better, taking every thing into consideration, than is this clover. But unless precaution is taken it will bloom at the same time white clover does; hence it is of less value than it would be, so far as honey is concerned, could it begin to bloom at about the time white clover failed. But it can be made to bloom at the time wanted by turning stock on it, letting them keep it eaten down short till about two weeks before you wish the bloom to commence, when it will give a good crop of blossoms and hay, though not quite as large a crop as it would if it could have had its own way.

If the questioner is young in years, and has patience to wait, I would advise him to plant basswood. In the list of honey-producing trees and plants it stands first in bountiful yields; and in the fine flavor and beautiful quality of the honey produced, it is second to none, while the day is coming when any thing in the way of basswood lumber will sell at a price that will make it profitable to the one who can furnish any number of that name. Fifty years from now this grand tree will have practically ceased to exist in our forests, and be little known save as it is planted by enterprising persons, or exists in some gorges or out-of-the-way places not easy of access. Where there were fifty trees



PLANTING FOR HONEY.

Question.—I wish to sow or plant something that will bloom about the time white clover fails. What is likely to pay best for honey

in this section in my boyhood days of thirty-five years ago, there is hardly one now; and the few that are left are of the "second growth," or so crooked and scrubby as to be of little value for lumber.

To prolong the season so as to have honey in August, I would advise sowing buckwheat. The honey it produces is not of so great value as the white honeys, yet it comes at a time when it helps the bees in building up for winter, and brings a price in market that will pay for the labor expended, while the grain will amply pay for the whole raising of the crop, so that all that is secured by the bees and their keeper is clear gain.

REPLACING QUEENS.

Question.—Is it best to change queens that are three years old? I have some that were just as good layers as ever last fall, in my strongest colonies; but I am told that I should change them in the spring, as they will fail to give good results next season. How long do queens live?

Answer.—Best queens live to be four, five, and six years old; but the average life of queens is about three and a half years. The length of a queen's life, other things being equal, depends upon the tax that is put upon her egg-laying powers, and under our modern management queens do not average so long-lived as they did in box-hive days. I do not think that the question of age, however, should be considered in the matter of changing queens, except so far as it may be taken as a sort of rule to judge of when they will be apt to fail. I would not replace a queen so long as she lays up to her full average, especially in the spring, for early spring is a time when any queen that is of any value can supply all the eggs that her colony can care for and bring to perfection. A change at this time results in a loss of bees at just the time when each bee is of the greatest value to push forward the rearing of others for the honey-harvest; hence if queens must be changed I would advise waiting till about 20 days before the honey harvest; for the loss of eggs usually sustained through a change of queens will then be no loss at all, as they would produce bees that would arrive on the stage of action after the honey harvest is past, only to become consumers instead of producers.

As to the changing of queens, I pay very little attention to the matter where the colonies are working for honey instead of queen-rearing, for I find that nineteen colonies out of twenty will supersede their own queens as soon as they need changing; therefore it is a waste of time for me to be worrying about this matter, keeping track of the ages of all queens, etc., when the bees will look after the matter at the proper time. The bees will attend to this changing, and make fewer mistakes than you are likely to make, no matter how careful and

wise you may be. Now, if any think Doolittle wrong in this matter, let them set apart a certain number of colonies to try each way, and a term of years will tell you which will pay you the better.



J. B., Va.—The Langdon device did not prove to be a success, and was abandoned as not accomplishing the desired end. As to whether the bees fought when thrown together, I don't believe there was any trouble along this line.

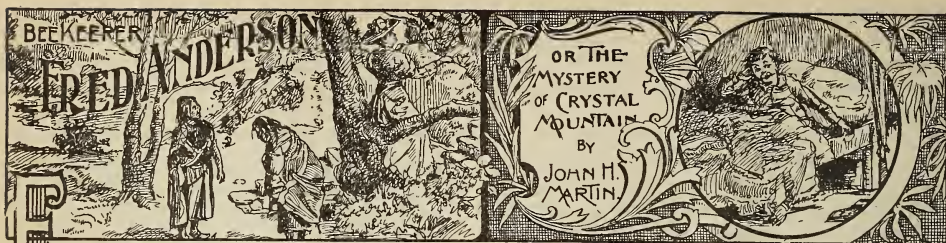
J. B., Mich.—A good deal depends upon your climate as to when you should take the bees out. Better a little late than too early. Better wait till about the middle of April or first part of May. The usual rule is when soft maples come into bloom.

E. A. C., Wis.—An absconding swarm may go anywhere from a few feet to several miles. Usually they go to the woods, from one-half to a whole mile from the point of starting. For further particulars see "Absconding Bees," in our A B C of Bee Culture.

A. R. W., N. Y.—1. As a general rule, bees fill the lower part of the hive or brood-nest full of honey before they go up into the supers. 2. Some bee-keepers have two entrances, especially if the hive is a tall one; but usually one is enough, providing it is large. 3. About 25 lbs. of sealed stores is required for a colony in a 10-frame Langstroth hive.

J. M. C., Ala.—The item in regard to glucose seems to be written by some one interested in the glucose industry. Even assuming that it is harmless, it has very little if any sweetening power, and is almost invariably used for fraud—that is, to piece out honey and other sweets. It is never sold under its real name, unadulterated, to consumers. Many of the statements in it are absolutely untrue. A few years ago the writer tasted glucose adulterated in various mixtures of honey; also tasted liberally of the pure glucose itself, and he had quite a sick spell after it.

G. B., N. Y.—It is not advisable to feed syrup during mid-winter. Better give them a mixture of powdered sugar and honey kneaded into a stiff dough. The probabilities are, your bees do not require any feeding all. The course you are pursuing tends to stimulate them unnecessarily, and will be more likely to kill them than to save them. If they have stores in combs, better let them alone and keep them as quiet as possible. The only information we can give you on the subject of winter feeding is that contained under "Wintering," in our A B C of Bee Culture.



FRED ANDERSON hurriedly drew on his clothing while stepping from his cabin, and saw, on the terrace below, Alfaretta dressed in white as he had seen her many times at her home. She was attended by two of the older squaws from the rancheria.

"How on earth did she get here?" said Fred, in an undertone.

In order to answer Fred's question, let us return to the Buell home, sixty miles away. After Matt Hogan had so hurriedly left the Buell wharf, as narrated in a previous chapter. Mr. Buell returned to the house, and, in company with Alfaretta, cared for the pony which Matt had left picketed near the hedge. Alfaretta petted and praised the pony in her demonstrative way, insisting meanwhile that it was a jack mermaid, and Jack it was thereafter called.

"How strange," said Prof. Buell to his wife, "that Ralph Hayden should turn up so near to us, and that, too, when we thought him dead! It must be nearly fifteen years ago that news came of his death in South America; but, my dear, I feel it my duty to hunt this man up; and, indeed, if it is our old friend and kinsman we have some things to explain and some things to regret."

"I suppose," said Mrs. Buell, "the regrets are over our change of name. The doctor may think it was done for purposes of deception. The thought of it, and of Alfaretta's condition, quite unnerved me when Matt delivered his message."

"Yes, my dear," said Prof. Buell, "now that you have opened the subject upon which we have been silent for years. I will say that I have many times regretted the change. Bull is a good enough name for any family. My ancestors all lived under it, and were proud of the name; and I have proved weak and recreant to the pride of my sires."

"This is at too late a date," said Mrs. Buell, "to repine over the past; the change is so slight that it does not worry me, and you know I never did like the name Bull."

"Yes," said Prof. Buell, reflectively, "but I remember you kept it to yourself until after we were married."

"Did I? Did I?" said Mrs. Buell. "How did it compare with my beautiful name, Valentine?"

"I know," said the professor, "that compar-

isons are sometimes made odious. I know that Valentine is a pretty name, but you appeared real glad, and so did your family, to have it changed to Bull."

"Oh me! oh me!" said Mrs. Buell, hysterically, "and I must take all the blame, all of it. I, a poor weak woman, must bear it;" and she rested her face upon her hands, and sobbed aloud.

"There—there, my dear," said Prof. Buell, softened by the sight of tears, "I think we had better drop this subject; let it remain buried again as long as it has been in the past. In the morning I will row up to Ghering's and find out from Matt where this Dr. Hayden lives. We may find another man, and all of these circumstances a mere coincidence;" and Prof. Buell stepped out of the house and shouted for Gimp, who was helping about the ranch for a few days. As no reply came to his repeated calls, he asked Alfaretta, who just then came up the walk, as to his whereabouts.

"Oh! Gimpy—why, pa, he is out by the river trying to change a sitting hen into a mermaid;" and then she laughed wildly.

"Goodness!" said the professor, as he started for the place indicated.

Just over the bank he saw Gimp, with a dilapidated-looking hen in his hands, ducking her head under the water, then holding her up; and while the poor hen gasped for breath he would shout earnestly, "Now, darn ye, set, will ye? darn ye! I'll learn ye to hogsnoggle the hul nest—darn—"

"Why, Gimp, what are you doing with that hen?" shouted Mr. Buell.

"Darn her, she'll set," said Gimp; "but I'll take it outen her," and the hen's head went into the water again with a "darn ye, set, will ye?"

"Here, Gimp," said Mr. Buell, "bring that hen right up here. Why, you've almost drowned her now."

"Yes, pa," said Alfaretta, "she's almost a mermaid."

"But that's the way mom allers cures a settin' hen," said Gimp. "Mom says yer can't drown a settin' hen. She ort t' had another dose; but I reckon she'd be tentified now to lay eggs, and not set."

"Well, Gimp, let the hen go; we will take your word for it, that she will not sit. Now I want you to mount Jack and trot down to the

postoffice. Those Italian queens I sent for must have arrived in the last mail."

"Wa', I reckon so tu," said Gimp; "this'll be the third trip I've made, and mom says three times and out."

With a few divisions and a few colonies from the trees, Mr. Buell had made a respectable increase of his little apiary, and now the queen phase of bee-keeping was upon his mind; and



upon Gimp's return this evening he was made happy by the safe arrival of three beautiful golden Italian queens.

The queens in their neat little cages, with the worker bees as escort, were examined with deep interest by the entire family, and Mr. Buell carefully studied the instructions for safely introducing the queen to a colony of bees. He was but a novice in bee culture; but the advances in bee-management in the last few years, and the plain instructions that accompany every phase of it, makes the attentive novice equal to any emergency, and the professor proceeded confidently, the next morning, to introduce his queens. One of the colonies was already queenless; and to this colony was due the queen movement on the part of the professor. When one colony greatly needs improvement, there are others that can be benefited. It required but little manipulation to place the cage containing a queen into the queenless colony, and leaving it so that the bees could release the royal occupant.

The next two colonies that needed improvement were black bees; and in the search for the black queens, as frame after frame was removed, Gimp saved Mr. Buell much time in the search, for it was his sharp eyes that found the queen in both instances. His training with Fred Anderson had not been without good results in various directions, and especially in the management of bees.

"Now, Gimp," said Mr. Buell, when the black

queen had been caught, "what shall we do with her?"

"Do jes as Fred did with his old queens—pinch thur heads off."

"These queens look so nice, though black, I do not like to kill them," replied Mr. Buell, musingly. "Here, Gimp, just skip over to the shop and get a couple of those old queen-cages that Fred left here."

"That's fine," said Mr. Buell, upon Gimp's return. "We will now save these queens and take them up to Matt Hogan; he may need them."

"That are so," said Gimp, slowly; "and ef you give Matt the queens, mebbey he will give you suthin'. Wish he'd give us his shotgun."

"Why, Gimp Dawson," said Mr. Buell, in evident surprise; and then, said he, impressively, "Gimp, you should not look upon a gift in that selfish way. It is our duty to help our neighbor in every way we can; but when we help that neighbor we should not expect to receive any thing in return. Why, my dear boy, if I expected Matt Hogan to give me any thing in return for the queens it would destroy much of the pleasure I have in making the little gift."

"That must be so, seein' you say it," said Gimp, in a hesitating tone; "but dad allus said real good folks never got rich: they was jest respectable; but dad was a curus man."

"Yes," said Prof. Buell, in a musing way, "just respectable; and in that way many a poor man is rich and many a rich man poor. Oh how mistaken is the world respecting riches! Sordid wealth has its pleasures for a day. The wealth of a day well spent, of helpful deeds, are eternity's jewels."

"How far that little candle throws its beams,
So shines a good deed in a naughty world."

"Yes" (and as he said it Prof. Buell's hand was laid gently upon Gimp's shoulder), "you should learn from the good book that 'a good name is rather to be chosen than great riches, and loving favor rather than silver and gold.' My dear boy, remember it." The queen introduction had been completed. Gimp was now directed to get the boat in readiness, and soon the professor and Gimp were rowing toward the Ghering ranch.

From Prof. Buell's personal knowledge of an enthusiastic lover of the honey-bee, he expected that, after so many weeks' absence from his pets, Matt Hogan would be examining his bees; and, as he fully anticipated, so he found Matt in his apiary.

"Well, Matt, how do you find them?" said Prof. Buell, as Gimp and himself adjusted their bee-veils and approached the hives.

"Sure, and they are doin' as will as can be expected of thim, seein' the ap'ry has had no father to it for so many days. The corner hive over there was undermined by the badgers, and it was cocked up sidewise, like auld Tim Brady's

hat. The skunks have been scramblin' in front of some; covers were awry, and the waads choked the front and the raar of the rist of them; and I am sorry, professor, to find three of me hives where they are all poor motherless children. There's no quans, and the dear little baas are as lonesome as—as—I am widout me Biddy Malony."

"Well, Matt, I am pleased to be able to make glad the poor motherless children in two of those hives. I have been introducing Italian queens to some of my colonies, and here are two black queens. I did not like to kill them, and thought possibly you could use them, and surely you can."

Then Prof. Buell handed the cages to Matt, who was much surprised and gratified over the opportune gift; and with much gusto he said, "Prof. Buell, it's mesilf that'd be after putting yees name wid the saints. Nobody but yeersilf would think of helping a poor fellow loike me; but, professor, it seems yees are always thinking kindly of yees neighbors."

"There, there, Matt; let me help you introduce the queens," said Prof. Buell, by way of an interruption to Matt's grateful expressions. When the work had been accomplished they sat down upon some empty bee-hives, and Prof. Buell said: "Matt, I came up here to ask you about this Dr. Hayden you spoke of yesterday. Where does he live?"

"Sure, I am not knowing where, professor. He said he lived in the mountains; and as to its bein' the Sary Nevada, the Coast Range, or toward ould Shasta, it's a sacret he held fasht to."

"Rather indefinite," said Prof. Buell, "but did Fred go off with this doctor, not knowing where he was going to?"

"I think he did, sur, and its yeersilf that wouldn't question the doctor, for he is that kind, like yeersilf, professor. Its mesilf that'd not be flattering yees, but I'm thinking there's a family resemblance between yees."

"Possibly," said Prof. Buell; "I knew a doctor Hayden many years ago; in fact, I had a cousin bearing that name, and I would go a long journey to find this doctor. Peradventure he might be the same."

"An' sure it was Frid and mesilf that mentioned yeer name furninst the doctor, and he said neither aye or nay to it. He ounly said it would sound better if the name was Bull—plain Bull."

The color of the professor's face heightened, and in a nervous way he arose suddenly from the hive upon which he was sitting and said, "Well, Matt, I hope you will have the best of success with your bees. We will not have Fred Anderson to give us instructions, so we must compare notes often, and instruct each other. Hello, Gimp! we must pull for home."

When the two disappeared over the river bluff, Matt Hogan, with hands in his pockets and eyes bent upon the ground, was evidently

struggling with a perplexing problem. Finally, in an undertone which increased in intensity, he said, "To me own thinking, there's somethin' mysterious about this whole business. If I says Adrietta, up go their hands in amazement. If I says Hayden, off goes Mrs. Buell in a swoon; and to-day it's Bull that stirs the professor off his seat, off home, and red in the face. Now, be gorry, I believe I'll shout calf to meesilf, and run to cover in the chapparal."



"PATENT PROCESS FOUNDATION."

MR. HUTCHINSON publishes an item that apparently gives an unfavorable showing to the new Weed foundation. In his introductory he says: "They have been experimenting with different brands of foundation over at the experiment station in Canada." Then he gives two paragraphs from a report that goes to show that the "patent-process" foundation gave the poorest results of any of the samples tested. The time this report was made (I think it was in 1894) was *before* Mr. Weed conceived the idea of making sheeted wax by his present plan. The article designated as "Patent Process" was not the same as is *now* made, and which has received the universal indorsement, both of experiment stations and private individuals. The experiment in question was, according to the experimenter, conducted late in the season, and the results were not, therefore, satisfactory.

FACTS AND FANCIES ABOUT THE NEW DEEP-CELL-WALL FOUNDATION.

MR. LEAHY, of the *Progressive Bee-keeper*, says that the putting of this article upon the market, to "accumulate wealth, and prostitute the teachings of the Bible," is "adulterating that which is spoken of as *sweeter than honey*," that "they say it contains no more wax than the thinnest foundation." If Mr. Leahy will show us *where* we have claimed it was as light I shall be greatly obliged; but I have said we *hoped* we might make it—that we had not yet. Again, he says: "I have before me a sample of this luscious foundation, the side walls of which are $\frac{1}{4}$ inch from the base. I have also a piece of thin and extra thin foundation." Then he goes on to show how by weight the foundation weighs less than half the "artificial comb," as he calls it, and then adds, "It is also claimed that this will be no more expensive than comb foundation. This looks fishy to me." I never said this. I stated distinctly, when we put out these samples (see p. 80), that they were heavily

er than we expected to make in the future; and later on (page 129) I stated that the walls were nearly three times as heavy as cell-walls of natural comb, but that bees would thin it down and make it as thin as the natural. Further on, Mr. Leahy believes the product will sound the death-knell of comb honey; that there is no advantage in the new article except to the manufacturers. In the first instance I have shown that Mr. Leahy has set up a man of straw, and, of course, knocked it over. In the second instance he has put forth fancy rather than fact. Practically the same claim was made in regard to foundation, and yet the foundation business has not hurt the honey business, but has been of great benefit to it.

In the same issue of the *Progressive Bee-keeper*, Mr. Doolittle editorially speaks in high praise of the new article, and winds up by saying: "Nor do I believe the Roots will risk their reputation on any thing which will injure the honey markets by pushing it to the front," and Mr. Hutchinson in the *Bee Journal* gives expression to the same sentiment.

In the *American Bee Journal* friend Bingham says of the new product: "Allow me to enter a protest against more wax in comb honey." Mr. Bingham had probably not seen what we published on p. 129, wherein we stated clearly that our object in the new product was to get less wax in comb honey. I don't believe he meant to accuse us of trying to do things that we are not; and further on Mr. Bingham says: "No one can blame the mixers for mixing low-grade honey; neither can they be blamed for buying drawn combs to put in bottles of honey. It would be no worse to put combs made of beeswax in honey than to put honey in such combs. As to such combs doing away with adulteration, nothing can so add to it." Mr. Bingham has fallen into the error of believing that the new article is drawn-out comb, and that it can not be distinguished from natural bee-comb. It is, in fact, nothing but deep-cell foundation with flat bases. The walls in any case will be less than half depth. The regular mixers would hardly think of putting such an article in honey, for it could be detected at a glance, and a transparent fraud won't pass.

In the same issue of the *American Bee Journal* Mr. Hutchinson still insists that, without trying it, the new deep-cell foundation is going to make a great "gob" in the mouth, and says: "I feel absolutely certain that its use will greatly impair the eating quality of comb honey;" that "the article will be tough and leathery." Why does Mr. Hutchinson speak so positively when he has not tried the comb from it?

Elsewhere in the same article he goes on and describes how he *thinks* the new foundation is made, detailing Mr. W.'s *old* experiment—how the cell walls are formed, and how the base is attached in some manner. Mr. Weed's original

method of making the article is very different from his present one. He now uses a press, similar in principle to the old Given machine, but uses hydraulic pressure instead. If the cell walls were formed, and the base stuck on, very likely it *would* make a "gob" in the mouth. And here I don't believe, either, that Mr. Hutchinson *meant* to cast discredit on a thing by attributing to it certain qualities which it had not, and by telling how it was made when he didn't know any thing about it. Further on Mr. Hutchinson says, and very truly, "Great was the kick against comb foundation when it was first introduced." Exactly; and it *looks* as if history were going to repeat itself on a small scale.

The brethren must not forget that we had been experimenting with this thing for about a year before we made it public. The quality of the comb honey, and the manner in which the bees accept the comb, have led us to put into it hundreds of dollars. We do not even now claim that we shall be able to put it on the market at such prices as will be within the reach of bee-keepers—the future will have to decide that; but we are in *hopes* we can. And please remember, too, that we consulted *before-hand* some of the brightest and most intelligent bee-keepers in the country, to whom we submitted samples. Among them I may mention such men as G. M. Doolittle, R. F. Holtermann, P. H. Elwood, Dr. C. C. Miller, Hon. George E. Hilton, M. H. Mendleson, Byron Walker, Geo. W. York, E. Whitcomb, besides all our local bee-keepers. Some of the men saw the machinery, and saw the product in the hives, and the product after it came out.

You may depend upon it, brethren, that we shall not put upon the market any thing that will in any way injure the comb-honey business; and friends Hutchinson and Doolittle have our thanks for backing up the statement. If we were to do so we should be doing ourselves more injury than any one else—mark that.

IMBEDDING FOUNDATION ON WIRES BY MEANS OF ELECTRICITY.

HAVING recently made some improvements in our electrical imbedding-outfit, and having prepared new directions and new engravings, we thought our readers generally might like to see how the job is done. The work is executed very much better and more rapidly than by the old-fashioned tracing-wheel plan.

DIRECTIONS FOR OPERATING BATTERY FOR IMBEDDING WIRES IN FOUNDATION.

Into a wooden pail pour about two gallons of boiling water, and empty the accompanying package (1 lb. bichromate of potash). Stir it well, and allow it to become dissolved. This may take several hours; then pour in half a pint of sulphuric acid. In pouring this in, be careful to pour slowly, and do not get any of the acid on the fingers or clothing. It is hardly safe to sip this, and you will, therefore, have to get it at your nearest drugstore. Now procure a couple of gallon crocks, such as are used for holding butter. As these can be bought

for a few cents we do not ship them, on account of their being bulky and heavy, and liable to break the delicate carbons in the package during shipment.

Into each of these gallon crocks pour an equal quantity of the solution. Place them on the bench near where you expect to work. Into each jar set a plate (Fig. 2) with its set of carbons, letting the plate itself rest on the top edges of the jar. Now insert the two zinc plates (as at Fig. 3). By means of one of the wires, connect the zinc (A Fig. 2) of one of the jars to the cast iron plate of the other (at B Fig. 2). Next fasten the terminals of the imbedding-fork (Fig. 4) to the two remaining screw connections—one wire at B Fig. 2 in one of the plates and one at A of the other. If you have done your work right, one wire of the fork will be attached to one zinc and the other to one cast-iron plate, and one wire will connect the two batteries. In the cut the wires are not connected right, although as there connected the batteries will work.

You are now ready for work. Lay a wired frame on the bench; over this a thin sheet of foundation, letting it come directly in contact with the wires. Now press the two feet of the fork (just inside of the end-bars, Fig. 4) down on two opposite ends of one of the wires or strands as shown in Fig. 1. This will cause a current to pass through that strand, and heat it. The moment the contact is made, press the fingers of the other hand along the wire until it begins to show through. Lift the fork up, and in the same way imbed the next wire. A mere stroke of the fingers back and forth once ought to cause the wire to sink into the foundation. Proceed thus with all the frames you have, after which lift the zincs out, as they corrode and waste away.

When one set of zincs is used up, take the others out and fasten them between wooden cleats, as the first set was, and connect on the binding-posts. When these are used up, ask your tinner to cut some pieces from his scrap zinc, same size. About once in 100 or 300 frames it may be necessary to pour in a little more sulphuric acid to "tone up" the solution. Sometimes a little stirring of the liquid will answer the same purpose.

We send along a few extra carbons (black sticks), so that, if any are broken in shipment, they can be replaced. A little melted wax or paraffine should be painted around the carbon next to the iron, to prevent the salts from creeping up after the battery stands.

The zincs will work better if coated over with mercury. To do this, get a little muriatic acid; moisten a rag in it, rub it in mercury (a few cents' worth), and then rub it on the face of the zinc. This will give the zinc a coating that will make it last longer.

The accompanying imbedding-fork (Fig. 4) is made to fit a Langstroth frame with the wire strung as shown in the accompanying frame (Fig. 6). If your frame is odd sized, or if you use the L. frame and wire perpendicularly, it will be necessary to change the distance between the feet of the imbedding-fork.

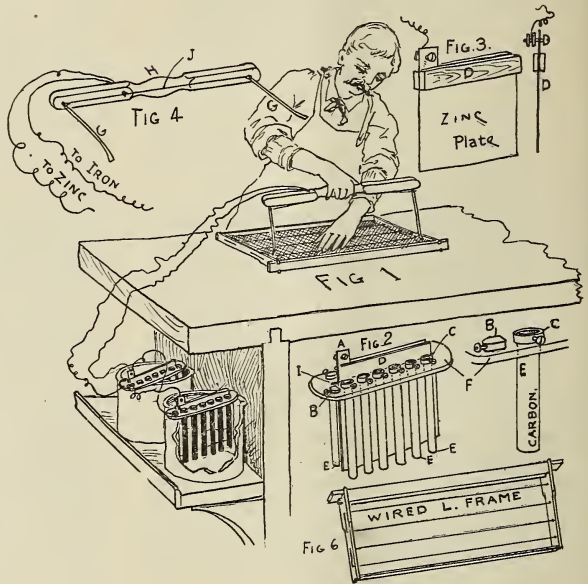
Keep all wires and battery connections clean, and be sure the zincs do not touch the iron or the carbons.

If the wire heats up quick enough to melt through the foundation, lift the forks off the wire quicker.

Some of our readers of an electrical turn of mind may prefer to make their own outfits. The carbon sticks are the ordinary electric-light carbons, and are fitted into holes in a cast-iron plate, and held secure by set-screws—see Fig. 2. There is a slot in the plate between and parallel to the carbon sticks. This is to admit the sheet of zinc. A piece of inch board

having a parallel row of holes for the carbons may be used instead of the cast iron; but the carbons must all be connected together by a naked copper wire wound around each carbon at the top. But this home-made affair is not nearly as effective as the cast-iron plate with its set-screws, for the latter make what is known as "good electrical contact."

Fig. 4 is the imbedding-fork. H is a strip of wood as long as the brood-frames. In each end is fastened two heavy iron wires flattened at the ends. To these wires are attached the battery-wires running along the groove J, uniting and passing through a hole near H.



The zinc plate is made of ordinary sheet zinc cut as shown in Fig. 3. Two strips of wood, as at D, are held in place by shellac or glue. It won't do to use nails, as the heads and points might stick through and touch the carbon, and so "short circuit" the battery—that is, spoil it. The theory and practice is, to send a sufficient current through the wire to heat it. Once heated, it is an easy matter to imbed it into the foundation.

MR. E. B. WEED, THE INVENTOR AND EXPERT WAX-WORKER.

It would be a revelation to some of you if you could see the improvements that have been made in making comb foundation. The old way was to dip a thin board into a deep vessel of wax enough times to secure a sheet on both sides. It was then cooled in water, and the film stripped off. It was next run through the mills piece by piece, and each time it was necessary to "pick" and "claw" at the ends

of the sheets sticking to the rolls as they came through. This operation did not improve the face of the mills, or the foundation. After the sheets were milled they had to be piled up, and cut to a size by hand, causing anywhere from 25 to 33% per cent trimmings that had to be melted over again. Last of all, the sheets were papered by hand and made ready for boxing.

Now if you were to peek into our wax-working department you would see an attendant pick up a big cake of yellow wax (60 lbs.) and set it into the machine, as it were, and then he leaves it and goes about other work. After it comes out it is converted into a long continuous sheet rolled up on a bobbin. This bobbin is then put into another automatic machine by the same or another attendant; the machine is started, and when this long bobbin of wax begins to unreel it is fed into the comb-mill, and is cut to size *without waste*. There is a click-clack, and the trimmed sheet is next made to lie squarely over a sheet of paper of the same size as itself, and pick it up; another click-clack, and it takes a hop, skip, and a jump on to the pile; and fingers almost human, but as lifeless as your barn door, true up the pile as evenly and nicely as you could do it with your fingers.



MR. E. B. WEED.

Nearly all of this is the result of the brains of one man, Mr. E. B. Weed, whose picture I take pleasure in presenting at this time. If he had done no more, his happiness would be all but supreme. But he is the inventor of the new deep-cell drawn foundation, to which I have referred in former issues. Even before he came here he was the inventor and patentee of a number of other articles, one of which I know he sold for a round sum.

Like every inventor, he has had his discour-

agements. His machinery and his appliances for wax-working all seemed to fail to work until he ran across the skilled employees of The A. I. Root Co., and the confidence of the firm itself in his inventions. Many and many a time it looked as if failure was *sure* to meet him as it had done when he worked for others having less confidence in his wild (?) schemes; but Mr. Weed, undaunted, and with a hope almost superhuman, and with the assurance that our firm would back him, would work and plod away until success was his.

When trying to solve a problem I have seen him so excited, and so thoroughly absorbed, that he scarcely knew what was going on about him. I remember once when one of his machines got into a "balky spell" (at the start they all had 'em). In order to make his kid "come to time," as he called it, in passing to the other side of the machine he collided with one of the women-folks carrying a pile of wax—knocked the pile over, and the woman too, nearly, but scarcely seemed to realize that he had had a collision and scattered the nice wax all over the floor. I have seen an idea seize him so quickly when walking, that, when he turned about face in his sudden, nervous way, his feet slid out from under him, and down he went in an ungainly heap. But he quickly regained his feet, and, so absorbed was he, that he seemed almost totally ignorant of the episode; but *he had the idea*; and notwithstanding I was convulsed with laughter he went on to tell me what it was; and as I continued laughing he innocently asked what I saw so funny.

During the last few days, Mr. Weed has been fussing (I guess that's the word) with a machine that would *not* do his bidding. It had balky spell after balky spell. He *knew it would* work, but was so tired out when I came into the room that he could not think any more, much less see where the naughty "kink" was. The next day, after a night's rest—if, indeed, he rested at all—he went at it again with a determination that I knew meant the machine had *got* to work, *and it did*; and to-day he sees the triumph of his perseverance and skill with that particular machine. The benign smile that now plays upon his face is contagious, for one can not but admire such pluck.

While he does not profess to be a mechanic, he seems to have a remarkable perception for mechanical possibilities. He will grasp an idea in an instant (he doesn't always tumble down). As indicative of his quick perception, he will take a whole page of reading-matter on the most abstruse subject, catch the whole idea, read every word of it in a tenth of the time it takes people generally.

Just where he will turn his inventive genius after he has made the wax business reach its summit, is hard to say.

OUR HOMES.

Fear not them which kill the body, but are not able to kill the soul; but rather fear him who is able to destroy both soul and body in hell.—MATT. 10: 28.

THE CRUSADE AGAINST CIGARETTES AND TOBACCO.

In scanning the daily papers of late I have felt like saying, "May the Lord be praised that the United States of America is finally waking up to the fact of what the cigarette business is doing every day to kill off our boys, both body and soul, where it is allowed to go on unrestricted." The teachers of our public schools have become so well aware of the fact that it kills the intellect more speedily and surely than any thing else that has ever started up that they are making vigorous protests everywhere. Tobacco is surely bad enough in its effects on the mind of the boy in his teens; but cigarettes seem to be tenfold more deadly. Perhaps one secret of this is the fact that morphine or opium in some form enters so largely into their make-up. For years past we have had terrible stories of the baneful effects of the opium habit in China, and among the Chinese in this country. The manufacturers of cigarettes are so devoid of conscience that they have no scruple whatever. I have sometimes thought that, even if they actually *knew* the result of their work is death to our boys, still they would not hesitate so long as the traffic puts a few nickels in their pockets for each boy killed. I am making terrible statements, I know; but ask the teacher who has care of your children and of your public schools if I am not correct about it. Ask your pastor; ask your family physician; and if the latter is not addicted to the use of stimulants himself, I think he will admit what I say to be true.

One reason why cigarettes are used so much more than cigars is because they are cheaper; and the fact that a *very small* amount of opium put into each cigarette will teach the boys the opium habit is one reason why they are afforded so cheaply. It is a terrible thing for a grown-up man or woman to be an opium-eater; but how much *more* terrible is it to think of starting children ten or twelve years of age in such a practice! One State in the Union has already, in view of these things, passed a prohibitory law. They declare broadly that cigarettes shall not be manufactured nor sold in the State of Tennessee.* It ought to stir the heart of every one of us to see the South taking the lead in such reforms as this. A similar crusade seems starting up all over our land. A letter right before me gives us a glimpse of what has been done:

Mr. A. I. Root:—Your good friends Dr. Miller, of Marengo, Ill., and Mr. York, of Ravenswood, became interested in the great fight our Christian Citizenship League is making against the tobacco habit. I am now here in the interests of a bill absolutely prohibiting the manufacture and sale of cigarettes in the State of Illinois. The next issue of the paper of which I am editor will be a special anti-tobacco number. Please write me briefly on receipt of this your plan for rewarding abstinence on the part of

tobacco-using bee-men. It will make a good point for the paper.

Should you be blessed with something to help us in the expenses of getting out our large special issue it will be most gratefully received. You could find no other avenue through which the money could do more for the cause which, I am told, is near your heart. Yours for clean manhood,

(MISS) LUCY PAGE GASTON,
Ed. *Christian Citizen*.

Springfield, Ill., Feb. 24, 1897.

In answer to the above, permit me to reply briefly, not only for the benefit of the writer of the above, but that the older readers of this journal may know something about the crusade that GLEANINGS started against the use of tobacco, and has kept up for almost twenty years past. It started something in this way:

I was visiting a young bee-keeper, and he lighted a cigar before attempting to open one of the hives. I remonstrated, and he said he was not in the habit of smoking; in fact, about the only time he used a cigar was when he wanted to handle his bees. I told him if he would throw away his cigar, and promise not to use tobacco again in any shape or manner, I would give him a nice new bee-smoker. In this he could use rotten wood, and therefore would not be obliged to have tobacco around in any shape.

"But suppose I should get back to using tobacco again—must I then give you back the smoker?"

"No; but you may pay me the price of the smoker."

As there were several other bee-keepers and others near by, this occasioned some merriment.

Another young man said, "If I promise to give up the use of tobacco may I have a smoker too, on condition that I pay for it if I ever go back to the tobacco habit?"

I told him he could have one on the same terms. If I remember correctly, a mother or a sister gave me a bright encouraging smile at about this juncture. The incident was related in GLEANINGS, and I made the offer to all its readers, that every tobacco-user who would take a pledge similar to that above, and have it published in the next issue of our journal, could have a smoker on the same terms; but if he went back to using tobacco he was to pay for the smoker, and also permit us to publish his letter acknowledging his going back to the habit. This was a very simple thing, but it seemed to strike bee-keepers at large just right. For many years quite a string of pledges was published in each issue of GLEANINGS; and a little later on we had enrolled a number of lawyers, doctors, and ministers of the gospel; and some pledges came from women in the Southern States, where it was then common for women as well as men to use tobacco.

When the calls for smokers began to come pretty thick and fast, some of the brethren said I might get "swamped," and have to back out of my offer of a smoker free of charge to any one who would give up tobacco. I told them I had no fears in that line; that the great God above would provide as many of the smokers, and stamps to mail them with, in such an enterprise for temperance and purity as I needed; and as I look back over the years that have passed I think I may truly say he has done so.

Several years ago when we hunted up, we found we had over a thousand pledges. We have not kept the number of those who afterward paid for their smokers, but there were very few comparatively. You see, when a man makes a public statement through a journal that is more or less read by his own family and the neighbors, he feels a little backward about going back to his old habit. As the price of the smoker we have been giving away is only

* In answer to an inquiry, we have just received the following in regard to the stand the State of Mississippi takes, not only in regard to cigarettes, but to cigars and smoking-tobacco:

¶ The code of Mississippi imposes a tax of \$50 on each dealer in cigarettes and cigarette paper. This law practically excludes cigarettes from the country stores and from the villages. The code provides further, that if any person shall sell or give cigarettes, cigars, smoking-tobacco, or snuff, to a minor under the age of eighteen, without the consent of parent or guardian, given in writing, he shall be deemed guilty of a misdemeanor, and punished by fine or imprisonment. Code of 1892, Sec. 1005. T. S. FORD.
Scranton, Miss., March 2.

50 cts., or 70 by mail, there is not very much at stake any way. A man can easily be released from his promise if he should at any time so desire. Below are the conditions on which we have been sending these smokers during the past years:

First, the candidate must be one of those who have given up tobacco in consequence of what he has seen and read in this department. Second, he promises to pay for the smoker should he ever resume the use of tobacco in any form, after receiving the smoker. Third, he must be a subscriber to GLEANINGS. Any subscriber may, however, have smokers sent to neighbors or personal acquaintances whom he has labored with on the matter of tobacco-using, providing he give us his pledge that, if the one who receives the smoker ever uses tobacco again, he (the subscriber) will pay for the smoker. The one who receives the smoker in this case need not be a subscriber to GLEANINGS, though we greatly prefer that he be one because we think he would be strengthened by reading the testimonials from time to time in regard to this matter. The full name and address of every one who makes the promise must be furnished for publication.

Before dismissing the subject of cigarettes I submit a letter from my daughter, Constance M. Root. The facts came under her observation while she was making a visit to the State Asylum at Columbus, for educating the blind children of our State.

During a recent visit to the Ohio Institution for the Blind, at Columbus, I found myself constantly wondering what had caused these boys and girls to be so afflicted; and on questioning the teachers and others I found that a great many of them were in that institution as a result of transgression of God's and nature's laws. The sins of the parents are being visited on their children.

But to me the saddest case in that institution is that of a young man who brought this terrible affliction on himself. He is the son of well-to-do parents, has had many advantages of education and refinement; but like many other boys he contracted the habit of cigarette-smoking while very young. He was working into his father's business, and had a great desire to appear manly. The habit grew on him to such an extent that he was seldom without a cigarette in his mouth during the day. When he was about eighteen years of age his health suddenly broke down, and for months he was in such a nervous state that he could not endure the slightest sound in his room. By the doctor's orders he was finally removed to a hospital, where not even his mother was permitted to see him. When he at last crept back to a degree of health his sight was hopelessly gone. He can see just enough to distinguish light from darkness, and to avoid running into people on the street; but his physicians say he can never hope to see more than that; and not only is his sight gone, but the poison of the cigarettes has injured his lungs to such an extent that it is very difficult for him to draw a long breath. He may some time completely regain his health; but his life seems blighted by the loss of his sight. I said, "seems blighted;" but that is only to those who are not well acquainted with him. He has recently become an earnest Christian, and I believe God has yet some work for him to do in this world.

I know he means to fight the tobacco habit in every way he can, and it is by his permission that I tell these facts; for although he is very sensitive, he is willing to have his sad story told if there is a possibility that it may keep some other young man from suffering what he has.

It may be well to add, that all the physicians who have had the care of him say that his blindness is undoubtedly the direct result of his cigarette-smoking. His physician published an account of his sickness and subsequent blindness in one of the daily papers in the large city where he lives, giving the cause as cigarette-smoking. One of the dealers in that part of the city said his sale of cigarettes had fallen off fifty per cent since that time.

THE PROGRESS OF THE CIGARETTE CRUSADE.

□ We take the following from a recent issue of the *Chicago Advance*:

□ The campaign against cigarettes is increasing in strength. Like most reforms of the kind, it is largely dependent on women; but women are a persistent power in these days, and they are pushing anti-cigarette bills into the legislatures of the various States. In Tennessee the governor has just signed an absolutely prohibitory cigarette law. The Connecticut law forbids the sale of cigarettes to persons

under 16 years of age. The Kentucky law makes the age-limit 18. The Massachusetts law, which is generally obeyed, forbids the sale of cigarettes to minors. The anti-cigarette law in Iowa was declared unconstitutional by the Supreme Court. In North Dakota a prohibitory law was passed two years ago, but it has remained a dead letter. In the Colorado legislature the lady members stood bravely for a bill to stop the sale of "coffin-nails," as cigarettes are appropriately called, but the male contingent of the body laughed the bill down. The Utah legislature almost unanimously killed the bill as soon as introduced, and the South Dakota legislature did the same. But these legislatures probably think that there are too many people in the world anyhow. In the Alabama legislature the House passed the bill, but it was defeated in the Senate by a trick. In a majority of the other States, bills are pending in the legislature, and they will slowly, but surely, get on the statute-book, for the cigarette is too deadly an enemy to permit this movement to go up in smoke.

[NOTES FROM THE EVANGELISTIC WHEEL.]

I was making calls in the village with the pastor. We called to talk and pray with one of his former deacons, now a well-known drunkard. Of course I was interested to know how such a terrible fall came about. The pastor told me the circumstances. He had been a drinking man years before, but had become converted, joined the church, became an earnest and consistent working Christian, and was finally elected deacon. All had nearly forgotten his former habits. One fall they had some cider in the house. The wife, a church member, and his grown up son were drinking, and asked him to do so. He refused decidedly, whereupon they began to laugh at him, as a very weak and foolish man. They kept this up till, chagrined and mortified at what they called his weakness, he yielded, and drank the cider. From that time he has been a drunkard.

A. T. REED.

□ The above should not only be a warning to us all, but it should be a *terrible* warning. I know it is true, because I have seen the same thing myself—yes, in my own neighborhood, here at home. It seems as if nothing could make people understand—even good Christian people—the danger that constantly hangs over the reformed inebriate. People have sometimes wondered what that strange passage in Matthew means: "A man's foes shall be they of his own household." The illustration that Bro. Reed has given us makes it clear. In following up the story of many a sad downfall, I have found that the victim was not nearly as much at fault as were his *friends*; yes, and many times the members of his own family. This poor man knew his danger, and very decidedly refused to tamper with the old temptation. His wife and his grown-up son laughed at him for his weakness. It was so long since he had been addicted to strong drink everybody had forgotten it. To them the idea was ridiculous and absurd, that he, a worthy deacon and Christian worker, should drink to excess. May God help us all. Dear friends, I have had glimpses of the bottomless pit, but it was long years ago. I often look back at those old times and wonder if it could really have been I—*myself*. The idea that I should long for or even think of anything so foolish and wicked! Why, it is absurd. I have often had this feeling; but, dear friends, within a single hour after, that old temptation has come back, and has towered above me like a veritable giant. As I felt his clutches closing down upon me I could only say as did poor Peter, "Lord, save, or I perish." Apples have been exceedingly plentiful, and no doubt cider is also, in many places now. Many good people drink it, and make sport of "temperance fanatics" because they refuse to touch it. Remember this sad story, and do not ever again urge anybody to touch or taste that which conscience tells him to let alone. And can't we go

a little further, and say with Paul, "If meat maketh my brother to offend, I will eat no meat while the world standeth"?"

Who redeemeth thy life from destruction, who crowneth thee with lovingkindness and tender mercies.

By some mistake my closing paragraph was omitted from our last number, and I have thought best to give it here:

After I got to feeling pretty well I felt troubled because my old interest and enthusiasm seemed lacking. Even when the greenhouses were doing their best along in the middle of February I did not seem able to scrape up much interest in seeing things grow, as I usually do. I prayed over this matter. I asked God to tell me what he would have me do with the strength that seemed slowly coming back. I wondered if it was his will that I should turn my thoughts to something else than to cultivating the ground, testing new plants, etc. Well, *that* prayer has been answered. I am now rejoicing in a degree of physical strength that makes it a pleasure to use my muscles. I am rejoicing, too, in enthusiasm and interest in all that is going on about me, especially in this matter that I have followed for so many years—cultivating the soil. I feel sure that I am doing the work God wishes me to do. And right here comes in that last part of our text, "Who redeemeth thy life from destruction." Without faith in God, where should we be? Then, again, how beautiful are those closing words, so full of promise—"Who crowneth thee with lovingkindness and tender mercies"!"



THE UNUSED FORCES OF NATURE.

Tempe lies about nine miles from Phoenix, on the opposite side of Salt River. After you cross the big bridge at Tempe there is one of the finest pieces of road for wheelmen imaginable. It is made of a sort of limestone found in the vicinity, and it packs down like asphalt. I frequently made the nine miles by moonlight. A good many times when I wanted to meet some of the bee-friends to get an early start, I would take the road by moonlight, before daybreak. When I had been there only a few days I started home late one evening from Phoenix. At the Half Way house one of the irrigating-ditches had broken through the embankment, and the road was covered with water. After picking my way around on the banks I got back on what I supposed to be the main road. I began to think after a while that things looked rather strange, even by moonlight; but I thought I would push ahead until I found a cross-road to make my way back to my route. No cross-road appeared, and I knew by my wheel that I was ascending at a pretty good speed. With such beautiful roads, however, it was not at all difficult. Finally the roar of one of the waterfalls on the great canal admonished me that I was getting away off in the wilderness, and it was also getting to be pretty well along in the night. I stopped at a house and inquired. The people were just going to bed; but our host opened the door an inch or two, and, after looking me over, he evidently concluded I was telling a straight story. In these regions they have reason to be a little suspicious of strangers who come around

after bedtime. He said there was a cross-road, and that I had come past it; but that if I would follow along down the banks of the canal I would reach the Tempe bridge, without any difficulty.

Now, I do not know how many waterfalls I passed by on that wonderful road. The sound of rushing waters is always inspiring to me, and under the light of the full moon every thing seemed weird and romantic. The mountains that loomed away up in every direction I might look; the huge cacti, as tall as telegraph-poles, and the different features of the desert, made me feel like building air castles. Shall I tell you of the air castles I built? This irrigating-canal has been pouring great volumes of water over these numerous waterfalls year in and year out for I don't know how many years past. Waterfalls are placed along at intervals because they want the water lower down. Any one of them was equal to the task of moving a turbine wheel that would furnish power to light the whole city of Phoenix, and perhaps run all her electric cars besides; and yet these falls are scarcely five miles from the city. Wood and coal here cost tremendously. Nobody has as yet ventured to make the connection.

A few days later somebody told me that, within about three miles of Tempe, there was a fall of forty feet in the water of the great irrigating-canal; that a company was organized, and they were already putting in an electric plant. Romeo (my brother's son) and I mounted our wheels, and were soon on the ground to investigate. Sure enough, there was a turbine wheel of 200 horse power already in place. The man in charge invited us to go down inside of the great water motor and see how it was made. While we were talking he seemed a little surprised at my enthusiasm in the matter, and—what do you think? Why, he is a bee keeper, has quite an apiary in that neighborhood, and had just been reading a bee-journal when we came up. He told me the turbine was exactly like those in use at Niagara Falls. They expected to turn the water on in a few days. While they were waiting for the necessary apparatus to convert the power into electricity they were going to use this great water-wheel to pump more water from a well just sunk in the gravel near by. You see, where there is a considerable fall in the irrigating-canal, and at the same time not enough water in the canal, they are going to take the power of the water-fall to lift more water from a lower level.

Now, with your permission I wish to digress from my travels just a little. Salt River Valley, Arizona, is not the only place where immense volumes of nature's forces are going to waste. The wind that is blowing over the roof of your house while you read this can be harnessed with little trouble and expense. It will light your homes with the most beautiful light in the world; it will warm your rooms and cook your food; turn the coffee-mill, grindstone, operate the churn, saw the wood, shell corn, and crack wheat—see page 170. What will it cost? Well, great factories are at work making short cuts to reduce the cost, every day. In fact, while I write quite a busy little factory is running on our own premises, for the manufacture of electric motors and dynamos. It is called the Ahlm-Edwards Electric Co. You can get one of their circulars by addressing them at this place. Last week they showed me a little dynamo not much larger than a good-sized watermelon. If I am correct, it takes one horse power to work it, and it will run twenty lamps of sixteen-candle power each. The price of this machine is now reduced to about \$70.00. To light your house by wind power you will

need a storage battery to operate when the wind does not blow. I do not know at present who furnishes these storage batteries; but I think the Aermotor folks, of Chicago, can tell you.



NOVELTIES IN THE WAY OF NEW FRUITS, ETC.

Like all the rest of you, I have been reading the new catalogs with great interest. I have been looking anxiously for reports in regard to the new fruits, more especially the Strawberry-raspberry, Golden Mayberry, and Logan berry. These three wonderful new fruits have been before the public for several years, and yet almost every catalog continues to repeat the stereotyped extravagant description made by the originator or introducer. The plants now are offered at a very low price—say 10 or 15 cents each. Some of the catalogs assure us that these plants will bear fruit this year; but I have not yet found one where the proprietor says he has grown the fruit on his own ground, and that the claims for it are true. Now, gentlemen, what is the trouble? If they can be grown so easily, and bear such loads, and even produce some fruit the first year, why can't you tell us something about it from your own experience? Are we to infer that the men who make the catalogs never go out into the garden at all? or don't they have any garden? I purchased all three of the above when they first came out, and I have been nursing them along ever since; but I have never yet succeeded in getting one of them to as much as blossom, neither have I seen anybody who has succeeded any better than I have. If any of the readers of GLEANINGS have got these plants in fruit, especially this Golden Mayberry, that ripens ahead of strawberries, will he please stand up and tell us about it? Just one thing more:

You know what a stir GLEANINGS made three years ago about the new forage plant sacaline. Well, a great part of the catalogs still copy the extravagant claims that were made for this plant—"grows from ten to fourteen feet high by June;" "stems or leaves, green or dry, relished by horses, cattle, or sheep;" "more nutritious than clover, millet, corn, or any other forage plant." Now, all this has been paraded before us in our catalogs for three years. I purchased some of the first plants sent out. I have tried them in our rich plant-beds, and have put them out in the fields; I have tried them on various pieces of rich ground, both wet and dry, and I never yet have succeeded in getting a stalk a yard high, to say nothing about doing it by "June." The plant blossoms, bears seed, and acts as if two or three feet were its normal height. It is worth just as much for stock as the common dock, which it so much resembles.

Now, I was just going to cast some severe reflections on the man who sent it out at 25 cents a plant, and the catalogs that still continue to boom it at ever so many dollars a pound for seed; but I think I will wait till somebody who sees this has a chance to assure me that he has succeeded better. It seems to me that our practical working people, gardeners, and fruit-growers should make a vigorous protest against these things. Why, the catalog men are killing themselves, so far as business is concerned, by hanging to these humbugs when our experiment stations have declared for the third season that

the claims are false and the plants utterly worthless.

At this season of the year, when all our space under glass is crowded to its utmost, not only is it desirable to have every foot of ground occupied as soon as a crop is removed, but in planting seeds we can do still better. Let us take tomatoes for an example. We plant the seeds in rows four or five inches apart. Now, as soon as the plants get fairly up, make a little furrow between the rows of plants, and put in some more seed. By the time the older ones are ready to be transplanted to another place where there is more room, the second lot will be just coming up. In this way we can have a growing crop all the while on the same ground. At this time of the year we cut a little strip of lettuce every morning for the day's sales. This strip is always cleaned off at once, the ground nicely sifted and smoothed over, and seeds or plants usually got right in the same day, and often during the same hour the lettuce was taken off. Where we go to the expense of having sub-irrigated beds, with heat underneath, it is all the more important that every foot of ground, as I have said, should have a growing crop on it all the while. When it gets warm enough so we can plant stuff in beds without heat, then it is not so very important; but still it is an excellent idea, after one goes to the expense of having beds made, and providing sash, to keep both beds and sash earning some money every day in the week.

THE CRANDALL CURRANT; SOMETHING IN ITS FAVOR.

Friend Root:—In the GLEANINGS of Dec. 1, Mr. Anderson, in speaking of the frauds in small fruits, classes the Crandall currant among them. Now, I have seen this currant fruiting for some years, and I do think it has a place among our small fruits. In the first place, it is not the black currant (*Ribes nigrum*), as Mr. Anderson says, but a fruiting form of the yellow or flowering currant (*Ribes aureum*). The flowering currant is a well-known old-fashioned shrub which is planted quite largely for its beauty, blossoming very early in the spring, with yellow, pendulous blossoms, very handsome and fragrant. It is quite a honey-producer too; but the bumble-bee seems to monopolize it. The corolla is very long, and the flower very much unlike the black and red currant *Indica*. The gooseberry flower is much more like the red and black currant. I succeeded once in crossing the gooseberry and black currant, but could do nothing with the yellow and black currant. I always thought if I had a place of my own I would plant a few of the Crandall currants for their beauty when in flower, and then for the fruit, which is very good for pies, jellies, etc., and it hangs on the bushes quite a while after ripening, and does not ripen up all at once; so the fruit is in season for a month or so.

Prof. Bailey, in Bulletin 15 of the Cornell Station, says of it: "It represents a new type of small fruits, which, when farther selected and improved, will become a staple."

This currant was introduced in 1888 by Frank Ford, of Ravenna, O. It has no doubt been overpraised by word and picture in the catalog of those dealers who make a business of doing such things; but its good qualities will give it a place among our small fruits, for I certainly believe it deserves one. Columbus, O., Jan. 18. E. C. GREEN.

Friend G., I am very glad of what you say. When the Crandall currant first came out I paid a big price for a single bush. It is now higher than I can reach, but it has never given us a handful of fruit; and, in fact, it looks almost exactly like a bush of yellow flowering currant in our garden, purchased some years ago of Storrs & Harrison. The fruit of the two is exactly alike, only that of the Crandall is considerably larger. The Crandall has our very richest market ground, and it is a perfect mass of bloom every spring; but there is only a currant here and there, and very few ever reach

maturity. We have seen half a dozen berries, perhaps nearly the size of a Concord grape. If any of our readers have a bush or bushes of the Crandall bearing crops of fruit, I should be very glad indeed to hear from them. A great many others have reported an experience similar to my own. It has been suggested that some of the plants are non-bearing, so that one needs half a dozen or more in a group to get fruit.

THE FUEL VALUE OF CORN.

The Nebraska Experiment Station has been making some experiments in regard to this matter; and, as nearly as I can understand, the result is something like this: When you are offered 12 cts. a bushel for unshelled corn, counting 70 lbs. to the bushel, and coal is worth \$6.50 a ton, you can afford to burn the corn instead of buying the coal. The estimate of 1 lb. of coal is that it is equal to 2 lbs. of corn; or, to speak exactly, 1.9 lbs. Even if this be true, it seems almost wicked to burn the corn, especially while millions are starving over on the other side of the world. Just now it looks as if we wanted cheaper methods of transportation as well as more of the missionary spirit to go with it.

CRIMSON CLOVER.

At this date, Mar. 15, our crimson clover is a "thing of beauty" and a "joy" to at least one individual. I am glad to say that there are acres of it where we dug our potatoes that are a perfect mat of green. Not a leaf has been injured, and the clover has made a considerable growth since the first of December. There is no question about it, it has grown wonderfully during the months of December, January, and February. Of course, we are not *entirely* through the winter yet; but from what experience I have had with the plant, I can not for a moment believe that this thick heavy mat is going to be thrown out by the frost. The stand is just about the same on our creek-bottom land, on some that is a little higher, and clear up on the hillside by the windmill. I am a little surprised that it should winter with us season after season, when so many other parts of Ohio report failure. Of course, our land is very rich. The seed was put in after digging a crop of 375 bushels of potatoes to the acre. The last was sown about the 15th of August, but it looks just about as well at present writing as that put in a month sooner.

back of and adjoining that is the closet, a vacant space of about 20 feet, and then comes the barn. You will see by this that the closet is far enough away from the house, yet we don't have to go outside at all to get to it. The closet is boarded and battened up tight, so that not a single crack is left for the least bit of snow or rain to beat in. There is a small window at one end to admit light. A ventilator runs from the under side of the top of the seat up through the roof. As the seat has accommodations for two, a couple of large galvanized pails are made to stand under the seat. I formerly used a drawer in here; but since reading Mr. T. B. Terry's explanations of his closet, in "Our Farming," I have used the pails, which I find to be far better. Not allowing any of the liquid to soak in as did the boards in the drawer, they can be kept much sweeter. Of course, they have to be emptied oftener; but having the stable so near the closet, it is a very easy job to raise the top of the seat, which is on hinges, and lift out the pails, and empty them into the manure-pile at the stable. It is then drawn away with the manure to the fields.

The most comfortable part about our closet is, we have the whole of the seat covered with a nice piece of brussels carpet, and I can tell you it is almost a pleasure to go there at any time of the year. A bin at one end holds the absorbent; and after trying all the absorbents I have heard of, such as dry earth, road dust, ashes, lime, etc., I have not found any thing so good as *dry sawdust*. It is clean to handle, absorbs all the liquid, and keeps down the smell better than any thing else I have used. In fact, there is hardly any smell at all when it is used liberally.

Having occasion to visit quite a little through the country, I have been amazed at the large number of places where there is scarcely any attention paid to the comfort of such places. In fact, in many places where I have been there has been no closet at all; and at others, the places they did have were veritable death-traps, with cracks open and doors off their hinges, and snow drifted all over every thing, and the owners wonder how it is they catch cold so often. I tell you, I am nearly always glad when I return home from one of those trips, where I can enjoy the comforts provided by a little forethought in laying out buildings and surroundings so as to be handy as well as comfortable; and why can not farmers and bee-keepers have such places when they cost so little compared with doctors' bills and other "ills"?

Of course, every one can not have these places fixed just like the one described above; but, dear reader, can you not improve considerably on the surroundings you now have? I should like to go on and tell you how, in my eighteen years of married life, I have, through sanitary measures, been able to live and enjoy life with an expenditure of less than fifty dollars for doctors' bills or medicine for myself and family. But this is not bee literature, and perhaps yourself and readers would not enjoy it as much as I do.

JOHN MYERS, □
□ Stratford, Ont., Can.]

Health Notes.

WATER CLOSETS; DRY-EARTH CLOSETS, ETC.; SOME
GOOD SUGGESTIONS FOR OUT-BUILDINGS
FOR RURAL HOMES. §

Mr. Root:—I was greatly pleased with what you say in regard to closets, in Health Notes, page 868, Dec. 1; and while the water-closet you mention is all right, and perhaps the very best kind that is used at the present time (and I would strongly urge all who can afford it to use no other kind), there are many persons, especially in rural districts, who can not afford to have a windmill and tank; and the closet you mention is of no use whatever without water. To this class of persons I should like to describe my plan of closet, as used by myself and family.

I think it is fully conceded, that, next to the water-closet proper, the dry-earth system is best; and for rural districts or villages, if properly built and rightly used, they are about all that is required. My house, of course, faces the road. In the rear of the house proper is the kitchen, and in the rear of this is the summer kitchen; immediately in rear of the summer kitchen is a wood or coal shed, and just

My good friend, before I got to the end of your excellent article I made up my mind that you lived away up north somewhere; but when I got through I smiled just a little to find that you are really a Canadian. I do not know why it is, but it has sometimes seemed to me as though the further one goes south the less attention is paid to this matter of tasty and attractive as well as convenient closets. When you get down in Florida—yes, and out in Arizona—some very stylish and modern hotels have their closets away off somewhere in the back yard, and not at all in keeping with the other appointments of the hotel.

You have suggested a very simple way of getting rid of the contents of the galvanized bucket or pail. Whenever it has been suggested that these should be emptied on the garden I have always felt as though it was not quite the thing. Neither the average hired man nor anybody else fancies the job; and, besides, unless the contents are immediately plowed or spaded under, it is a very unsightly feature around the home. In winter time almost the

only place is, as it seems to me, the manure-heap, and it is but little work to incorporate it thoroughly with the stable manure. But not everybody has a stable. In my little book, "What to Do," I suggested having an all-metal wheelbarrow. Have the closet so made that the wheelbarrow may be wheeled in from the back side, so as to stand directly under the seat. Such a wheelbarrow can be made to hold the accumulations of a month or more; and once a month somebody can take a spade and spade it under out of sight in the garden; but when the garden is frozen up, what then? Will some reader of GLEANINGS help us out? I like the metal-wheelbarrow arrangement, because one need not touch any part of it except the projecting handles.

□ Once more, our good friend from Canada, has given us the very best absorbent, in my opinion. Before we had the water-closet we now have, we used ashes or road dust. Mrs. Root objected to both, because, whenever you throw down a shovelful, unless you are exceedingly careful a cloud of dust rises up; and unless the seat is carefully dusted off, your good clothes will get a dusting, to say nothing of that nice new brussels carpet friend M. speaks about. Well, now, the dry sawdust does not rise in a cloud like road dust or ashes. If possible, use hard-wood sawdust, for it is much better for the garden. The very small quantity needed, however, would not be very objectionable, even if it were pine. There is another objection to wood ashes: They quickly liberate ammonia from stable manure or any other kind; and along with the ammonia we have certain odors that are not altogether pleasant. Sifted coal ashes do very well; but with these we have the objectionable cloud of dust unless the one who handles them is very skillful and careful. I am glad to see so much interest in regard to this matter; for my suggestions referred to in the above article have brought out many communications, and several requests for more light on the same subject.

Humbugs and Swindles.

ELECTRICAL HUMBUGS.

I have not "let up" on Electropoise and similar quacks because they have been driven from the field, but because I concluded I had done my part in warning the public. Electropoise still continues to be advertised in a good many magazines, and especially by periodicals professing to be *religious*. Let them go on, and let God be judge as to whether such things are consistent with the Christian profession. My attention has just been called to the matter by a clipping sent me by Dr. Geo. E. Hailes, the man who has the American Tongan beans. Here is the clipping:

The English government has undertaken to check the manufacture and sale of electric belts, brushes, pads, etc., on the ground that they are sold on false pretenses, and warranted to cure diseases over which they have no influence.

That is the talk, friends. Let the government take hold of it. Our expert chemists and intelligent physicians can very easily decide (by experiment if need be) whether these traps have any effect or not on the diseases of the human family. It is an easy matter to decide whether there is any electricity whatever about the greater part of them; and I think it may be settled quite conclusively that they have no effect whatever on the patient, except through the agency of the imagination.

On page 171 of our last issue I spoke about sending for instructions for making a home-made windmill. I sent my stamps to Francis Casey, St. Louis, and in the instructions we read as follows: "The castings are worth \$4. Any one can get the castings by sending to the Mound City Dishwasher Co., St. Louis." In *Agricultural Advertising* for February we find the following:

The Newspaper Collection Agency of this city reports that their office receives claims against them at the rate of from one to six a day, ranging in amounts from \$5 to \$50, and in total to several thousand dollars. No efforts on the part of the Collection agency can get a settlement from the Globe people.

The advertising that they are sending out is for goods owned by the Globe people, and is placed in such names as "Mound City Dishwasher," U. S. Fruit Co., J. F. Casey & Co., and Miss A. M. Fritz. On inquiry at the addresses given, it was found that no such firms existed, but that the Globe people got mail there in those names.

□ Permit me to repeat, that all this class of communications to newspapers, telling how somebody made great profits by selling a dishwasher, churn, or some similar thing, and that wind up by a pretense of wanting to benefit their "brother farmers" or hard-working sisters, are probably frauds. They try to get these communications inserted among regular reports from farming people or their wives. Where the editor of the newspaper has little or no conscience he will put it in the general reading-matter if he gets paid for it. Sometimes he puts it in *without* getting pay for it, as you will see in the above. But even if the editor insists that it shall go in the regular advertising department, and under the head of advertisements, he is, in my opinion, more or less a party to fraud and deceit; and, worst of all, he is helping to defraud the very people who are obliged to sell their corn, oats, and other produce at such ruinously low prices. It is not only wrong and unchristianlike, but the papers that help to push this kind of fraud, and try to shirk the responsibility, will find, sooner or later, that "whatsoever a man soweth, that shall he also reap." They will find that there is a surplus of some things in this world of ours besides corn and oats, and there is just now getting to be a surplus of periodicals. The editor who is not careful, not only of his reading-columns, but of his advertising department as well, will find a lack of readers, and a lack of *dollars* to keep his paper going. Great is truth, and will prevail; and our farming people are fast learning to hold the editor of their family paper responsible for the advertisements he sends into their homes. Any editor can with little trouble ascertain whether his advertisers are responsible men or *frauds*.

WHO SHALL BE GREATEST?

On page 129 appears something that I did not see till it was in print — I mean that item as to who has done the most for the cause of apiculture in years past. Once upon a time the followers of our Lord and Savior were disputing among themselves. When he asked them what was the ground of their disagreement they all hung their heads down and said nothing; for the facts of the case were they had been disputing as to who should be greatest. Now, I hope it will never be necessary to have such discussions appear in the columns of any of our bee-journals. Shall we not seek to cultivate that beautiful virtue that "suffereth long, and is kind," "vaunteth not itself," and "seeketh not her own"?

A Dollar Saved

is better than one earned. Read my 37th annual catalog, and don't send out West for goods you can buy cheaper here at home.

I have added 2400 feet of floor-space to my store-house and shall keep in stock Root's polished one-piece sections. Dovetailed hives, new Weed foundation, etc., in addition to my old line.

Best breeds of bees and queens at bottom prices. Don't buy until you see what you can do with me.

W. W. CARY, Colrain, Mass.

In responding to this advertisement mention GLEANINGS

Our Prices are Worth Looking at!

IN THE

New Champion Chaff Hive Especially.

All other supplies accordingly. Send for catalogue and price list. Address, mentioning GLEANINGS.

R. H. SCHMIDT & CO., Box 187, Sheboygan, Wis.

MUTH'S HONEY-EXTRACTOR, SQUARE GLASS HONEY-JARS, ROOT'S GOODS AT ROOT'S PRICES,

Bee-keepers' Supplies in general, etc., etc. Send for our new catalog. "Practical Hints" will be mailed for 10c in stamps. Apply to

CHAS. F. MUTH & SON, Cincinnati, O.

Early Queens By Return Mail.

Best tested Italians, \$1.00 each. Queens are vigorous, healthy, and prolific. The workers are unsurpassed as honey-gatherers. Send for price list.

J. W. K. Shaw & Co., Loreauville, La.

The Cultivator,

Published semi-monthly at Omaha, Nebraska, is the leading authority on fruit grown in Nebraska, and on general agriculture in the West. Send for sample copy and free strawberry-plant offer. Address

The Cultivator, Omaha, Neb.

Sweet Potatoes.

½ pk. G. C. Prolific, ½ pk. G. Grant, 3 pks. Yellow Jerseys, all for ONE DOLLAR. Here is an opportunity to try the new vineless varieties at a small cost. J. Q. MULFORD, Lebanon, Ohio.

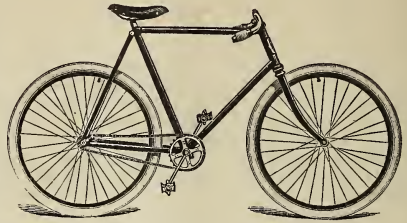
1500 Bbls. Sweet-potato Seed.

Yellow Jersey, Carolina, and Nansemond, selected size, \$2.50 per barrel; 2d size, \$1.75 per Bbl. Red Jersey and R. Nansemond, 2.50 " Red Bermuda and Red Spanish, 2.75 " South. Queen and Bahama White, 2.75 " Vineless or Gold Coin Prolific, 4.00 " Discount of 25c per bbl. on 5 bbl. lots. Send for free circulars. Address

**L. H. MAHAN, Box 143,
Terre Haute, Ind.**

In responding to this advertisement mention GLEANINGS

1897.



Cleveland Bicycles.



Every piece and part of the Cleveland Bicycle is made in our own factories by the best of skilled workmen, under most rigid inspection. The result is a Bicycle embodying, in a marked degree, features of safety, speed, and durability.

THERE'S HONEST VALUE IN IT.

We want the patronage of intelligent and discriminating buyers. 1897 catalog mailed free for the asking.

**H. A. LOZIER & CO.,
Cleveland, Ohio,**

Send 4 cents postage for our booklet, "Shakespeare and the Bicycle." Two ve illustrations in colors by F. Oppen, of "Puck."



and protects the scrotum, and should be worn in every case where there is any drooping of the scrotum. It is especially recommended to wheelmen, equestrians, base-ball, foot-ball, and lawn-tennis players, athletes, men doing heavy work, much walking or standing, etc. Ask your physician's advice about wearing a Suspensory—perhaps it will relieve your backache. Our \$1.00 grade is very popular, and your dealer, or we, will sell you one and refund money if not perfectly satisfactory. For sale by all druggists and dealers in athletic goods. Send for price list. A. J. WELLS MFG. CO., 250 Tallman Street, Syracuse, N. Y.

In writing to advertisers please mention this paper.

FREE TO BEE KEEPERS. How to manage bees? Send for our 36 page, Illustrated Catalog. It tells you all about hives, fixtures, sections, bees, queens, etc. One best and cheapest good.

JOHN NEBEL & SON, HIGH HILL, MO.

EARLY QUEENS from good stock (one yard averaged 420 lbs in '94). Have kept bees since '74; sold thousands of queens the past six years. Price \$1.00, March and April. Free catalog.

J. B. CASE, Port Orange, Fla.

COLUMBIAN RASPBERRY, \$2.50 per doz; currant, gooseberry, grapevines, \$1.00 per doz., prepaid; chestnut and English walnut, 25c each, prepaid; Pearl gooseberry, 50c each.

T. G. ASHMEAD NURSERY, Williamson, N. Y.